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Cover Picture: Fishermens' nets outside the church in Jastarnia.
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A TYPOLOGY OF MANUSCRIPT EVIDENCE FOR THE RUNES*

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Runic inscriptions on wood, metal, and stone have long been considered the primary object of study among runologists. In the following paper I will propose a typological classification of the manuscript evidence for runes and show some of the correlations to other areas of the tradition.

1.0 Classification

With any body of evidence, satisfactory classification is a prerequisite to systematic analysis and evaluation. Yet, the manuscript evidence for runes has never been completely or comprehensively classified. The standard handbooks normally devote to this evidence a few lines scattered amongst the other material. Exceptions are Derolez (1954) and Dillmann (1975). However, Derolez' book appeared in a very small printing and deals only with actual runic signs, predominantly in the English tradition. Dillmann's exhaustive treatment of the runes in Icelandic literature is unpublished and generally inaccessible. In the following paper, a systematic classification is proposed and evidence for the categories reviewed.

1.1 Classification and Definition of Runic Material

The runes are a writing system, used by Germanic speaking peoples from at least the second century of our era until the 19th century. Although the exact origin of the script remains unclear, it clearly derives from one of the Mediterranean writing systems either Greek, Latin, or North Italic and ultimately from the Phoenician alphabet (cf. Moltke 1985; Morris 1988; Kniezsa 1990:245). This script had 24 characters in its older form (called the *fuþark* after the first six characters) and 16 in the more recent, Scandinavian variant. In England, an expanded 28 and then 33 character *fuþorc* was developed. A form of runic script was used in the Dalarna district of Sweden into the 19th century (cf. Jansson 1987:162ff). The runes had both phonetic and ideographic values. Thus, for example, the

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first rune, *f* (ᚠ), was named *fehu*, and served as the transcription of /f/ and as an ideogram for "wealth, prosperity".

The "proper" subject of handbooks and monographs on the runes is any evidence, direct or indirect, for the use or knowledge of runes. Most treatments of runes deal with primary evidence (i.e. inscriptional, graphic usage) and make secondary evidence (i.e. reference to runes in non-runic contexts) subsidiary.

We may classify primary runic material by: a. find situation, b. internal criteria, c. external criteria.

1.2 Find Situation.

The categories of find situation are: dating, site of find, medium. Düwel (1983:123-124) favors classifying the oldest inscriptions by medium and site of find, because this classification is least dependent on possibly dubious attempts at interpretation, in contrast to geographical, chronological, and contentual orderings.

The find site of runes is commonly used as a classificatory criterion, e.g. the Swedish vs. Icelandic corpus. Sometimes the frame of geographical reference is more limited, e.g. the Bergen *kefli* which were found in the Norwegian town of Bergen in the 1950's after a fire in the historic wharf area of Bryggen. *Kefli* are small wooden staves with runic inscriptions. The inscriptions from Bergen include letters and messages, curses, price markers, and obscene scribbles (cf. Liestøl 1963).

Finally, the medium or bearer of the inscription is used as a criterion. Thus, runes on bracteates are treated separately from runes on fibulae, runes in manuscripts from those on stone.

1.3 Runic Internal Criteria

Here there are two areas: script form and medium. Inscriptions belong together which make use of common script archetypes. We distinguish, for example, inscriptions using ᚺ from ones using ᚻ. The chronological classification of older and younger runes is here recapitulated because the archetype of the older *fuþark* is different than that of the younger. Inscriptions with mixed forms (i.e. Latin and runic) may be distinguished from those with exclusively one or the other alphabet.

A further runic internal criterion is the formal aspect of the writing. One speaks, for example, separately of ligature and secret runes. Ligatures commonly combine a vertical stroke of two characters. Secret runes usually are numerical ciphers, based on the regular ordering of the runic alphabet. These are actually two levels of intention. With secret runes, the writer intends to conceal his words, i.e. is considering his circle of readers; in ligatures, on the other hand, we see a practice found in many other writing systems of

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writing individual signs together, whether for aesthetic or space reasons is irrelevant. The German term *Binderunen* is commonly applied to the ligatures, but this usage is misleading and unnecessarily obscures the fact that ligatures are a typologically frequent class.

Finally, the medium of the inscriptions may partially determine the form of the script and its manner of production.

1.4 External Criteria

The two main external criteria are: a) language and b) function of the linguistic utterance in the extralinguistic world. Linguistic analysis includes grammar, phonology, and lexicon of the evidence, sometimes according to the above-named criteria of chronology and geography.

The most important functional classes in the texts are: inter-human communication, magic, and religion. In order to define these latter areas more closely, text internal analysis implies relating syntactic or semantic characteristics of the texts to a cultic, magic, that is to say, communicative act. One may also reconstruct the acts connected with runes by applying typological universals of human relations to the supernatural (cf. especially Flowers 1986). The secondary attestations from non-runic literature concerning function and use of runes are important in clarifying this area.

2.0 Manuscripts as a Medium

One of the above named categories of classification was by medium. An example will show how such a category may be further delineated. We will examine the evidence from manuscripts (from before ca. 1500 a.D.), if it bears on runes in any way.

Although there may be reference to runes as early as Tacitus, the greatest mass of material stems from Scandinavia. The two major investigations on runes and manuscripts are Derolez (1954) for the English tradition and Dillmann (1975) for the Scandinavian. Dillmann, unfortunately, has never been published. A copy became available to me only after completion of this manuscipt so that I generally could not incorporate his findings; however they seem to concur with my own. Earlier works on the subject limit their scope to only a few occurrences in literature.

In the following I differentiate between primary and secondary occurrence of runes in literature. A primary occurrence is when actual runes are written. The two levels of communication are: runic usage and "runology". The secondary occurrences do not have actual runes, but rather, they are mentioned or discussed. The investigation is difficult because the linguistic reflexes of "rune" can mean both 'written symbol' and 'secret' (cf. Düwel 1983:1). Further,

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the runes may be mentioned without the writer using the word "rune". As will be seen below, there are several subclasses of secondary attestations.

2.1 Primary Use of Runes

2.11 Runic Usage

Runes are used in manuscripts either as phonetic or conceptual signs (Derolez 1954:xxiv). Runes as phonetic signs occur both in entire texts (e.g. for short notes, names, or in artistically written title pages; once an entire Scandinavian legal manuscript: the *Codex Runicus*) and as single runes in texts which are otherwise written using Latin script. For example, the thorn and wen runes (ᚦ -ᚹ), were used in Old English for sounds not found in Latin. In the Old High German *Wessobrunner Gebet* a sign is constructed using the *g*-rune (ᚷ).

Runes as ideograms are especially well known in Old English. The poems *Elene* (1256-71), *Crist* II (793-814), *Juliana* (699-711), *Salamo and Saturn* (89-138), and the *Husband's Message* (49-50) all contain runes with ideographic meanings, written within texts that are otherwise in Latin script. Cynewulf has woven ideographic runes into his poems, written otherwise in Latin letters, creating an acrostichon of his name, the so-called "Cynewulfian Signatures". The exact interpretation of the runes' concepts is disputed (cf. Schneider 1956; Halsall 1981; Elliott 1989). Ideographic runes are often termed *Begriffsrunen*, but as with the ligatures (§1.3), using a German designation is unnecessary.

As a variation of the ideographic runes, runes also appear logographically in the manuscripts. In Old Norse and Old English manuscripts, the *m*-rune (ᛗ) is used as an abbreviation for 'man', even it this word occurs as a sequence of sounds within a longer word (i.e. syllabographically). The *d*-rune (ᛞ) is used in Old English as an abbreviation for *dæg* 'day' (Derolez 1954:xxiv-xxv).

Finally, runes are used without sound or conceptual value as "quire marks", i.e. as marginal notes referring to other parts of the manuscript (cf. Derolez 1954:xxv)

2.12 "Runology"

This category includes the scientific/didactic treatment of runes. Examples include the various runic poems and Abcedaria, which follow the pattern: name of rune, short poem describing the rune's ideographic meaning and function. The rune poems probably share a mnemonic function with our present day sayings such as: "alpha, beta, gamma delta, that's the way the Greeks they spelt her..." This category can be a mixture of primary and secondary usage, for apart from discussing runes, the actual forms are usually given.

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Rune forms and formulae are also present in the magical and medical texts; e.g. in the Old English medicinal formula *Wiþ Lenctenadle*:

> Again, a drink against lent addle *or typhus*; feverfue, the herb rams gall, fennel, waybroad; let a man sing many masses over the worts, souse them with ale, add holy water, boil very thoroughly, let *the man* drink a great cup full, as hot as he may, before the disorder will be on him; *say* the names of the four gospellers, and a charm, and a prayer, etc. Again, a divine prayer, etc., ᛞᛗᛖᚱᛗᚦ. ᚺ[and] ᚦᛁᚾ ᛞᛗᚱᛗᚦ ᚺ[and].ᚦᛁᚾ. {Thine hand vexeth, thine hand vexeth}.
>
> Again, a man shall in silence write this, and silently put these words on the left breast, and let him not go in *doors* with that writing, nor bear it in *doors*. And also in silence put this on, EMMANUEL, VERONICA. (translation from Cockayne 1865:141)

Gratton & Singer point out that the silence before the statement is to prevent "inauspicious utterance" and that the phrase is in runes and "so has magic power" (1952:34). Bonser (1963) discusses the illness, showing cogently that it is not typhus, which only made its way to England later, but rather malaria (*tertiana*). The prescription is a "how to" for runes.

2.3 Secondary Attestations of Runes

I differentiate the following levels of indirect sources:
1. Runology: Direct information concerning runes, instructions, etc.
2. Attitudes towards runes: Runes as a category of knowledge.
3. Use of runes: Runic forms, media, formulae, communication (magical and profane).

2.31 Runology

On numerous occasions in literature, runes are mentioned didactically, either in order to instruct the reader directly or to instruct a third person in the text whereby we, as readers, participate. Examples are in the *Edda*. The *Hávamál*, for example, describes the apotropaic function of runes (138-9) and the use of individual runes (140-65). Sigurðr is taught about runes in the *Sigrdrífumál*.

2.32 Runes as a Field of Knowledge

In Old Norse literature, the runes as a field of knowledge are ascribed to the upper class, as is emphasized time and again in the *Edda* and sagas. Ríg teaches his son runes in the *Rígsþula*. His

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grandson Kon ungr learns the runes and subsequently attains the highest position in his society. In the *Völsunga saga*, Sigurðr learns all arts, chess, and the runes. In the *Heimskringla*, (*Ynglinga saga*), Óðinn teaches various arts, including runes and magic songs. In the *Grípisspá*, Grípir informs Sigurðr, that among other things Brynhild will teach him of runes. In many passages, runic knowledge is mentioned in connection with persons or deities. In the *Egils saga*, Egil emphasizes the fact that only a rune master is able to use runes properly.

2.33 Runes in Profane Communication

I differentiate here between "letter", literary, and general communication. This distinction is necessary, because even scratching one's name on a sword is an act of communication. Nonetheless, this process is qualitatively different from the use of runes in "letters", since in the latter case, a specific reader is normally intended as the goal of communication. Literary communication, to be true, does have the same goal of communication as an inscription of ownership, however, a wider circle of readers is intended; in contrast, the readers of an inscription of ownership are generally coincidental.

Runes in a non-directed profane communication are mentioned as on weapons (e.g. *Beowulf* 1695, the owner of the sword with which Beowulf kills Grendel's mother; a spear in the*Gisla saga*) but also on other objects such as, for example, a chest (*Flateyarbók* 3,345) and stone.

Runes in literary communication are most clearly attested in *Egils saga*, where Egil asks his daughter to inscribe on a *kefli* (cf. §1.2) a song for the death of his sons. The text only records his request, not whether the daughter carries it out. Also not specifically mentioned is the use of runes as opposed to Latin letters.

Runes in letter communication are commonly mentioned in Icelandic literature, but the earliest reference comes from Venantius Fortunatus (565 B.C.), who proposes to a friend that he use "runa" painted on wood in order to write a letter. In the *þáttr þórsteins uxafóts* a dumb woman scratches a message in runes on a *kefli*. In the *Atlamál* (4,9) Guðrún attempts to send her brothers a warning using a *kefli*. In the *Guðmundrs saga*, a shipwreck is found on Greenland, 18 years after it had been lost. The six dead left the story of their fate "written with wax and runes". The runes were presumably written on a wax tablet.

2.34 Runes in Magical Communication

The attestations for magical communication using runes are extremely numerous. The most important magical functions are:

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casting lots, protection from supernatural forces, operative magic (cf. Flowers 1986).

Casting lots with runes may already be mentioned by Tacitus (Chap. 10), although we cannot say with certainty that his *notae* are runes. In the *Vita* of Willibrord a Frisian king casts lots which may have runes inscribed on them. Hrabanus Maurus mentions the runes as a means of prophecy in his treatise *De inventione linguarum.*

An example from the *Svarfdæla saga* may show the apotropaic function of a runic inscription. An Icelandic woman, Þórarna, conceives in Norway two illegitimate children. She gives her children to a certain Grís, as he is sailing to Iceland. Grís is supposed to give the children to her father. Grís demands a token for the father, so that he will know that these are his grandchildren. Following this request, "She (Þórarna) removed a *kefli* from under her scarf and gave it to him (Grís); on it many words were scratched..." Later on: "Then Grís shows him (the father) the *kefli*, and Þórstein recognizes his own words, although it had been a long time." It is not completely certain that these are runes. Nonetheless, the question is raised whether this *kefli* was saved only for the purpose of giving a sign of recognition (*Gnorisma*), or whether the words written on it had an additional apotropaic function.

In the *Gísla saga*, a spear is inscribed with "magic signs" which are possibly runes and which are intended to bring success in battle. Similarly, signs are affixed to the sword in the Old English *Salamo and Saturn* with the aim of improving the fighting chances of the carrier. Runes were carved into poles in formulae which supposedly strengthened the power of oaths.

Operative magic is often associated with runes. In Bede (*Hist. Eccl.* V,10) guards suspect that a captive is repeatedly freed from his bonds by means of runes (actually, the masses that his brother has read for him do the trick). Saxo Grammaticus I,38 describes how Harthgrepa places wooden staves under the tongue of a corpse to make it speak. In the *Sigrdrífumál*, Sigrdrífa is kept asleep by means of sleep runes. In the same lay, Sigurðr receives runes of fortune mixed in his drink. In the *Skírnismál*, Skírnir threatens the giantess Gerð with a *þurs* rune, if she does not obey the wishes of the god Freyr who is in love with her. In the *Egils saga*, Egil makes use of runes a number of times in order to carry out magical operations. Once he causes a vessel containing a poisoned drink to burst by scratching runes on its surface. In another instance he sorts out the miswritten magic runes of a farm youth which had led to the illness of a girl.

2.35 Rune Forms and Production

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Literary materials only occasionally allow a reconstruction of runic forms. In the *Atlamál* (4) runes must be sorted out before being read, which allows us to deduce secret runes. In the above-mentioned incident in the *Egils saga*, the farm youth apparently made mistakes in the inscription of secret runes, leading to the girl's illness instead of awakening her love.

Runes are either scratched, painted, or first scratched and then painted. Rather than go into the various examples of ways in which runes are inscribed, I refer to Flowers (1986:158-161).

2.36 Runic Media

Runes in literature are inscribed onto *kefli*, wax, tree stems, weapons, poles, the left breast. In the *Edda*, other media such as paw of bear, old wolf's claw, and midwife's hand are mentioned which are probably of symbolic nature (*Sigrdrífumál* 16-20; but cf. §2.12).

3.0 Significance of Runes in Literature

What is the relationship between the descriptions of runes and their use found in literature and runic usage in other transmission? If the manuscript tradition does not agree with the epigraphic tradition, we must explain the reasons. Further, the principle question as to the sense of the classification used above must be answered.

To deal with the second question first: this classification is only useful, if it clarifies problems and raises new questions that wouldn't otherwise have been asked. As will be seen, the approach succeeds in these goals, but *cum grano salis*. Below, I compare the manuscript transmission to other areas of transmission.

3.1 Actual Runic Usage

The main uses of runes in manuscripts were as phonetic or ideographic signs or as quire marks. The latter category is characteristic for longer texts and thus excluded from the epigraphic tradition. Both of the former uses are well attested in the epigraphical material. Logograms are missing in the non-manuscript material.

The manuscript tradition alone contains treatises on runes, since didactic or learned writings are seldom preserved monumentally. Thus, a category of content is bound to a category of material. We can not exclude the writing of runological material on *kefli*, but it is not attested as yet.

The only real functional difference between the *Codex Runicus* and the monumental inscriptions is the length of the texts. A division of this text from the monumental inscriptions is thus not necessarily reasonable. On the other hand, because this manuscript *per se* is

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almost unique, it is certainly important for research into the manuscript tradition. The question is not so much why we have this manuscript, but rather, why there aren't others like it.

That runes are adopted into the Latin alphabet is not surprising or of great significance, except that we thus learn for certain that people who could write also knew this other script and were not afraid to make use of available means to write their language adequately.

3.2 Runes as an Area of Knowledge

"Runic knowledge" is a fruitful category because this aspect of the writers' conceptual world is little mentioned within the epigraphic tradition. However, the manuscripts are not the only source of such information, for much can be extrapolated from the inscriptions, but the manuscripts remain the most important source, at least for Scandinavia.

It is true, that the mediaeval associations of runes with the upper class are somewhat contradicted by the finds of runes in Bergen where price markers, obscene scribbles, and simple messages by commoners were found. The contradiction may, however, be illusory, for in literature runes are associated with the upper class; that the lower classes also used runes is not stated, but also not denied.

3.3 Runes in Profane Communication

The category of profane runic communication is enriched by the actual material and both traditions are complemented. However, the situation varies according to type of inscription.

We do have owner inscriptions on weapons in both traditions, but inscriptions of makers are missing in literature. Whether this lack is coincidental or not cannot here be answered. At least one non-profane inscription on a spear is known in the epigraphic tradition and such inscriptions occur in literature (cf. Düwel 1981).

That runes were also used for writing down literature is confirmed by poetry in the Bergen inscriptions. The functions of the short Bergen texts are not yet entirely clear. A long work such as a saga is unknown. However, since we have no sets of *kefli* from that time or a large "rune-board" such as would be necessary to preserve longer texts, the lack of longer literary inscriptions may be coincidental (cf. Jansson 1987:174 for an illustration of a late set of *kefli* used as a calender).

The Bergen inscriptions give striking confirmation of the use of runes in letters, agreeing with the reports in the sagas. However, the Bergen inscriptions include a number of types of letters not mentioned in literature; conversely, several types of letters

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mentioned in the sagas are not found in Bergen or elsewhere. For example, the report of the lost sailors in the *Guðmundrsaga* is not matched in the epigraphic tradition. The runes of the Bergen wax tablet, which were concealed in the wood behind the wax layer, are conversely without example in literature. The lack of mutual attestation is, however, most likely coincidental.

3.4 Runes in Magical Communication

For runes and magic the attestations are rich in literature and the epigraphic tradition. Only for casting lots do we have no material remains. This may be explained *inter alia* by the fact that such small pieces of wood disintegrate easily. We know of runes on amulets from the earliest period, but the manuscripts tell us very litle. This is perhaps in part because amulets play no part in the saga plots.

The attestation of curses is common both in literature and in the epigraphic material. A much longer treatment would be necessary to determine whether each attestation has a complementary piece. Nonetheless, as a question of typology, it is clear that the two types of attestation should not be separated.

Although the attestations of operative magic do not agree with each other, it is clear that runes were often used for this, so that the lack of one or the other magical operation in the material is probably coincidental. The danger exists for a comparison, that an author thought up some operation which could have occurred, but never did. Paradigmatically much is possible which has never been but into practice.

3.5 Rune Forms - Methods of Writing

As mentioned already, the forms of runes can rarely be recaptured from literature. We can interpret secret runes in literature only because of actual epigraphic attestations. Early treatises on ciphers and codes do give forms, but this is a primary usage. Secondary sources are by their very nature not well suited to clarifying such material concerns.

On the other hand, the literary material helps us immensely in the reconstruction of inscription production. We have, it is true, a few painted inscriptions, but the literature explains to us the significance of this painting. We may speculate using the tools of anthropology, that a speech act was connected with the production of inscriptions, but the inscriptions themselves cannot prove this, only the literature can. Again, the two types of tradition complement each other.

3.6 Media

In the reports about runes in literature, many media are not mentioned. One finds in literature mention of weapons, *kefli*, wax, a

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chest, bones, and a beaker. Jewelry, tools, and paper or parchment are not mentioned although they do exist epigraphically. Perhaps one can trace this lack back to the fact that the sagas are primarily Icelandic, whereas the epigraphic rune finds are much more common in Scandinavia and the rest of Europe. We also find, for example, no wax inscription, but this is presumably a function of the perishable material. The Old English prescription quoted above (§2.12) instructs the healer to "put these words [in runes] on the left breast". For obvious reasons, such media are not preserved. Perhaps a find of mummified corpses such as those in Greenland will fill this gap in transmission, but the chances of such runes surviving are minimal.

4.0 Conclusion

In the attempt to deal with a medium in a purely synchronic manner, one neglects the fact that the situation is much more complex. We must reckon with chronological, geographical, and the associated linguistic levels. Almost all secondary attestations of runes and their use come from the Old Norse and have, on the one hand, a great significance in connection with the Old Norse runic tradition, but, on the other hand, little value in dealing with the earliest runic material. Similarly, the Old English attestations of runes in manuscripts are of only secondary importance for investigating Old Norse runes, unless the two streams of transmission can be associated because of inheritance or contact. Such comparison of material has the greatest value for runology in general; otherwise the secondary manuscript material must be considered subsidiary in the various fields of runological study.

With one example, one may see how a purely synchronic analysis can lead to false conclusions. In the literary material there are no references to bracteates with runic inscriptions (except perhaps in the *Sigrdrífumál* 19 where the reference, however, is to a good-luck token). A synchonistic analysis of this fact with no reference to outside material would perhaps conclude that the bracteates possess a *secret* "magic or protective" function. But: the bracteates come from a time and a region from which we have no literary tradition of any kind concerning runes.

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JUNG AND LEVI-STRAUSS REVISITED: AN ANALYSIS OF COMMON THEMES

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The relationship between the works of Jung and Levi-Strauss has been problematic for some time. The similarities between their fields of interest and certain of their conclusions is so striking that it has sparked accusations of plagiarism on the one hand, and what amounts to outright hostility on the other (D'Aquili 1975, Gardner 1985; Kugler, 1982, p. 39 ff.; Chang, 1984).

In the 1976 article "The Influence of Jung on the Work of Claude Levi-Strauss," Eugene D'Aquili attempts to show that Levi-Strauss borrowed directly from the works of Jung but failed to acknowledge his source. The alleged lack of acknowledgement sprang possibly from fear of association with the mystical, non-scientific leanings of Jung on the one hand, and an attempt to distance himself from a man accused of being in sympathy with the Nazi Party on the other (p. 48).

D'Aquili begins with the observation that some knowledge of the work of Jung is necessary to Levi-Strauss because in two works, *The Elementary Structures of Kinship* and *The Savage Mind*, he attacks Jung's concept of the collective conscious (p. 42). Later, in the same article, D'Aquili notes that these books present a perspective on the collective unconscious that is, by the time of their publication, out of date by a factor of 15 years for the one and 30 years for the other. Based upon this time lag, D'Aquili suggests, as an alternate possibility, that Levi-Strauss' representations of Jung are set up as classic straw men; they only appear to suffer destruction in order to illustrate a point. For the remainder of the article D'Aquili develops a series of parallels which strongly suggest that Levi-Strauss owes Jung more than a passing debt of gratitude.

While it is not necessary to enter the fray as to direct influence, it is useful to note the similarities between the two.

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Whether the influence suggested by D'Aquili existed, or not, the possibility of parallel development is worth much more as a validation of the insights of both men.

The first significant treatment of parallelism between the two men relates to an extensive quote from Levi-Strauss' Essay "The Effectiveness of Symbolism (1958)." D'Aquili points out that the passage bears so striking a relationship to Jungian formulations, that it "could have been lifted directly out of Jung (p. 44)." Indeed, a close examination of the passage finds it reflecting an almost Jungian unconscious characterized by foci which hold the power to 'crystalize emotion.' Without following his extensive quotation as a single unit, we will examine several shorter passages from the same segment.

On page 202 of *Structural Anthropology*, in the Essay noted, Levi-Strauss, discussing the nature of the psychoanalytic and shamanistic cures, points to the fact that:

> ... the traumatizing power of any situation... must... result from the capacity of certain events, appearing within an appropriate psychological, historical, and social context, to induce an emotional crystallization which is molded by a preexisting structure. In relation to the event or anecdote, these structures - or, more accurately, these structural laws - are truly atemporal.

More apropos to the context than the text provided by D'Aquili, compare this classical passage from *The Archetypes and the Collective Unconscious* where Jung notes that the archetypes exist:

> ... not in the form of images filled with content, but at first only as *forms without content*, representing merely the possibility of a certain type of perception and action. When a situation occurs which corresponds to a given archetype, that archetype becomes activated and a compulsiveness appears, which, like an instinctual drive, gains its way against all reason and will, or else produces a conflict of pathological dimensions... (para 99).

The parallel is striking and implies a similarity of perspec-

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tive between the two that requires the existence of an unconscious organizer of perception and action. Moreover, the observations both require a presence for the structure throughout the species.

Proceeding with the passage identified by D'Aquili we find more striking parallels. On page 203 we read:

> ... the preconscious, as a reservoir of recollections and images amassed in the course of a lifetime, is merely an aspect of memory. While perennial in character, the preconscious also has limitations, since the term refers to the fact that even though memories are preserved, they are not always available to the individual. The unconscious, on the other hand, is always empty... As the organ of a specific function, the unconscious merely imposes structural laws upon unarticulated elements which originate elsewhere - impulses, emotions, representations and, memories. We might say, therefore, that the preconscious is the individual lexicon where each of us accumulates the vocabulary of his personal history, but that this vocabulary becomes significant, for us and for others, only to the extent that the unconscious structures it according to its laws and thus transforms it into language.

Again, bypassing D'Aquili's example from Jung, we turn to *Two Essays on Analytical Psychology*, and the essay "On the Psychology of the Unconscious," first published in 1917.

> We have to distinguish between a personal unconscious and an impersonal or transpersonal unconscious. We speak of the latter also as the *collective unconscious*, because it is detached from anything personal and is common to all men, since its contents can be found everywhere, which is naturally not the case with personal contents. The personal unconscious contains lost memories, painful ideas that are repressed (i.e., forgotten on purpose), subliminal perceptions, by which are meant sense perceptions that were not strong enough to reach consciousness and finally, contents that are not yet ripe for consciousness (para 103).

These striking parallels suggest that both men were

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observing the same structures from very similar perspectives. Both divide the unconscious into dual segments, one personal, and one impersonal. They also see the deeper, impersonal level as providing a content free infrastructure upon which content builds.

The next element of similarity to which D'Aquili points is the pattern of oppositions and their resolution. Levi-Strauss sees just such a dialectic as representing the underlying structure of the unconscious. From "The Structural Study of Myth" we quote the following:

> ... mythical thought always progresses from the awareness of oppositions toward their resolution... We need only assume that two opposite terms with no intermediary always tend to be replaced by two equivalent terms which admit of a third one as a mediator; then one of the polar terms and the mediator become replaced by a new triad, and so on (1955, p. 188).

Patterns of opposing elements were, of course, central to Jung's scheme. The principle of oppositions is pointed out by Jung as an essential characteristic of conscious thought (1959, para 419). He notes that "There is no consciousness without discrimination of opposites (ibid., para 178)." The following quotation, from *Aion*, reflects an oppositionally based dynamic that Jung saw at the heart of the psyche. Although it reflects Jung's view of psychic organization, it is, never-the-less quite similar to Levi-Strauss' own dialectic.

> As opposites never unite at their own level (*tertium non datur!*), a superordinate "third" is always required in which the two parts can come together. And since the symbol derives as much from the conscious as from the unconscious, it is able to unite them both, reconciling their conceptual polarity through its form and their emotional polarity through its numinosity (1959a, para 280).

Following Staude in his treatment of Jung's doctrine of symbols, (1976, p. 319) we reproduce the following passage from *Psychological Types* as another locus of dialectic mental

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activity:

> From the activity of the unconscious there now emerges a new content constellated by thesis and antithesis in equal measure and standing in compensatory relation to both. It [the new "living symbol] forms the middle ground on which the opposites can be united... The ego, torn between thesis and antithesis finds in the middle ground its own counterpart, its sole and unique means of expression, and it eagerly seizes on this in order to be delivered from its division (para 825 as cited by Staude, Ibid.).

We also note Jolande Jacobi's observations with regard to the dialectical development of the living symbol and its structural similarity to the pattern of oppositions propounded by Levi-Strauss (despite the dissimilarity of logical level):

> A symbol is *alive* only as long as it is "pregnant with meaning," only as long as the opposites, "form" and the "raw material of imagery" (thesis and antithesis), combine in it to make a whole (synthesis) so that its relation to the unconscious remains effective and meaningful (1959, p. 97).

Finally, D'Aquili cites at length Jung's analysis of kinship structures as an anticipation of Levi-Strauss' *Elementary Structures of Kinship* by more than 3 years. The similarity is striking but does not require repetition here (1975, p. 47).

If we look carefully at these similarities, based upon D'Aquili's analysis, we find the following apparently common understandings. There lies at the heart of the psyche an unconscious element that structures behavior, but that in and of itself can never become conscious. It is common to all people and exists at the level of biology. Jung called it the collective unconscious, Levi-Strauss, the unconscious. Somewhat more closely allied to consciousness there exists a layer of contents which have been forgotten, repressed, or for some other reason remain below the level of consciousness. In general, these contents have been marked by use, tagged by social convention, or otherwise ordered so as to identify them

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with certain kinds of patterns that emerge between the interplay of consciousness and the unconscious infrastructure. This level was called by Jung the personal unconscious, and by Levi-Strauss, the preconscious. Both authors recognize that the ordering of the contents of the repressed/forgotten unconscious materials are by means of a dialectic between various levels of meaning and structure.

Another effort at reconciliation of the two theories was made by John Raphael Staude in his 1976 article "From Depth Psychology to Depth Sociology: Freud, Jung, and Levi-Strauss. The outlook of the essay is presented in an introductory comment:

> The general problem that concerned Freud, Jung and Levi-Strauss was to discover and explain a hidden order in the mental and cultural life of mankind. Each of them assumed a universality and collectivity of human nature at its deepest, archaic levels that flew in the face of the historical and cultural relativism that prevailed in the social sciences during their lifetimes. Each of them sought to demonstrate the essential structure and pattern of human mental processes through an analysis of human cultural products such as art, dreams, music, mythology, and particularly language. (p. 304).

Staude's perception of the designs of his subjects suggests that with common goals we should be able to find common answers, if not full agreement. In his analysis of Jung, he begins by pointing out Jung's debt to the French school of sociology from which Levi-Strauss ultimately sprung (thus providing a root for possible similarities as well as a possible answer to some of D'Aquili's questions – see above). According to Staude, Jung is in wholehearted agreement with many of their observations with the exception of adopting a strategy that concentrated on the inner experiences of the individual (p. 316).

Moving first to the theory of archetypes, Staude points to the similarities already noted above with regard to the existence of psychic structures capable of crystalizing emotion. He then proceeds to point to an apparently significant

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difference in perspectives between Jung and Levi-Strauss as to the nature of the unconscious, noting that for Levi-Strauss the unconscious was empty of content and contained only rules for the organization of memories and emotions.

We have already shown how Jung and Levi-Strauss seem to be in agreement as to the division of the unconscious into personal and transpersonal segments. Is there some agreement as to the content, or lack of content in the transpersonal arena?

It would appear that the source of this problem and many others with regard to the collective unconscious, is a failure to separate the collective unconscious from its expression in the other organs of the psyche. The confusion is understandable, as Jung often mixed logical levels and seems to have often fallen into non-linear thought patterns. His works are full of metonymy and metaphorical leaps that often leave the more analytic and linear scholar in the dust.

Jung's description of the collective unconscious progressed from a series of images in its earliest formulations, to a purely formal set of structural principles, devoid of content. In the classical passage from *The Archetypes Of The Collective Unconscious* he notes the following:

> It is necessary to point out once more that archetypes are not determined as regards their content, but only as regards their form and then only to a limited degree. A primordial image is determined as to its content only when it has become conscious and is therefore filled out with the material of conscious experience. Its form, however ... might perhaps be compared to the axial system of a crystal, which, as it were, preforms the crystalline structure in the mother liquid, although it has no material existence of its own. This first appears according to the specific way in which the ions and molecules aggregate. The archetype in itself is empty and purely formal, nothing but a ... possibility of representation which is given a priori. The representations themselves are not inherited, only the forms ... (para 155).

This definition is crucial to our understanding. It is the

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Jungian position that the archetypes are purely formal. They are not images, they are not filled with content. Content accretes about the archetype at a higher level of integration. They are structural dominants, and nodal points that organize psychic experience.

We compare this definition of the archetype to Levi-Strauss' discussion of the growth of myth, as follows:

> ... myth grows spiral-wise until the intellectual impulse which has originated it is exhausted. Its growth is a continuous process whereas its structure remains discontinuous. If this is the case we should consider that it closely corresponds, in the realm of the spoken word, to the kind of being a crystal is in the realm of physical matter. (1955 p. 193-4)

If the unconscious is the ordering factor to which this growth corresponds, we have an essential equivalence between the two formulations. There is, however, more.

As noted in the quote from Jung, the collective unconscious organizes the materials of conscious life, drawing them into the underlying order. Understanding that the myth is composed of preformed and predefined images that are arranged according to the dialectic processes of the unconscious, Levi-Strauss would appear to make a similar claim for his unconscious on the pattern of bricolage.

> ... the possibilities always remain limited by the particular history of each piece and by those of its features which are already determined by the use for which it was originally intended or the modifications it has undergone for other purposes. The elements which the bricoleur collects and uses are 'pre-constrained' like the constitutive units of myth, the possible combinations of which are restricted by the fact that they are drawn from the language where they already possess a sense which sets a limit on their freedom of manoeuvre (1962, p. 19).

That this is the pattern employed by the Levi-Straussean unconscious is made clear from the passage already cited while

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discussing D'Aquili:

> As the organ of a specific function, the unconscious merely imposes structural laws upon unarticulated elements which originate elsewhere - impulses, emotions, representations and, memories. We might say, therefore, that the preconscious is the individual lexicon where each of us accumulates the vocabulary of his personal history, but that this vocabulary becomes significant, for us and for others, only to the extent that the unconscious structures it according to its laws and thus transforms it into language. (op. cit.)

Although Staude sees Levi-Strauss' interpretation of the unconscious as providing a significant advance over the others he reviews, his analysis is faulted due to his misreading of Jung. In light of the above analysis we find the author praising Levi-Strauss for insights gleaned by Jung at least 25 years previously (p. 326).

In his final pages, Staude notes that Levi-Strauss saw his signal contribution as the illumination of the patterns of mind without emotion or content. While no-one can deny the truth and the depth of Levi-Strauss' contribution, one cannot but wonder with Staude and Douglas whether the emphasis on form sans content or pattern has often been an overemphasis.

Since their original publication, the works of D'Aquili and Staude, seeking a common ground between Levi-Strauss, have come under attack by M. Joseph Chang (1984). In his opening sortie, Chang makes the following statement:

> Scattered allusions to influences by Jung on Levi- Strauss and to supposed similarities between their concepts and methodologies have in recent years been given a more elaborate presentation by D'Aquili, Staude and Gras. Unlike these authors, I contend that Levi-Strauss' theories of structural anthropology are very different from as well as inimical to, Jung's psychoanalytic theories. These attempts at a rapprochement between Jung and Levi- Strauss were prompted partially by a strange reification of the term "unconscious," and the consequent attribution of some necessary kinship between users of the term .... The three authors fail to see essential

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> contrasts such as between Levi-Strauss' concept of a universal human unconscious and the Jungian concept of a biologically transmitted phylogenetic unconscious which differs from one group to another (p. 101).

Having defined his topic, Chang proceeds to define several of the niceties of the structural program. 1.) Levi- Strauss studies culture/symbolic systems, not for culture's sake, but in order to understand what lies beneath it and makes it possible. 2.) The infrastructure upon which these symbol systems build is the unconscious. 3.) The unconscious' sole function is to apply universal, formal laws to elements from outside of itself: it has no content. 4.) The laws of the unconscious operate on a binary pattern of oppositions and correlations.

In general, these points, with the exception of point one have been handled already in our discussions of the works of Staude and D'Aquili. As stated here they are broadly compatible with our previous observations.

That Levi-Strauss' ultimate aim is different from Jung's bears little weight if our interest lies in the similarity of findings. Whether or not Levi-Strauss holds contempt for religion or is attracted to anthropology as an amusement or, as a tool for improving the human condition; whether he is a materialist or mystic has no relevance to whether or not the data uncovered by the two systems are comparable.

Central to Chang's argument is that those authors who have sought similarities between Jung and Levi-Strauss have reified the unconscious. He gives precious little in terms of justification for this statement except to declare in summary, that D'Aquili, Staude and Gras have assumed that their common use of the term unconscious with Levi-Strauss' implies some commonalty of referent which he feels to be unjustified. Beyond the assumption of a common referent, he makes no further analysis.

Chang notes that Levi-Strauss sought to move away from consciousness as an undependable source of information about the roots of the human psyche. He therefore moved towards the empty and formal unconscious and its manipulation of the

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confused and random mass of data in the personal unconscious. This move away from consciousness to find the source of consciousness was undertaken because, according to Levi-Strauss, introspection was perceived to be an epistemological dead end that can never lead to objective knowledge. Consciousness, moreover could not be differentiated from the unconscious except insofar as it appeared as an external manifestation. Consciousness, in the end, is a function of language, an external and totalizing environment that is driven by laws below the level of consciousness. (Levi-Strauss 1962, p. 252; Chang 1984, p. 103 ff.)

We have, however already seen how Jung's differentiation between the collective and the personal unconscious are strikingly similar to Levi-Strauss' unconscious and preconscious. Jung, moreover, also saw consciousness as arising out of and requiring constant intercourse with the unconscious. It is not a far reach to link the *Massa Confusa* of Jung and the Alchemists with the seemingly random upwellings from the unconscious which Levi-Strauss used as the source of material for the Bricoleur's art.

As Chang continues, he provides an adequate, if uninspired overview of Jungian theory, heavily flavored with a Freudian structure that does not characterize the bulk of the Jungian corpus after the split with Freud. He then takes on the more specific challenges of D'Aquili, Staude and Gras (pp. 105-107).

The essential critique begins with the observation that all of the authors acknowledge that Levi-Strauss had criticized Jung on several occasions. This he deems to be proof positive that Levi-Strauss could never be similar to Jung. Chang seems to think that a criticism negates any possibility of influence. The same kind of thinking is displayed later in the paper when he criticizes Staude's attempt to provide a historical link between Jung, the French sociologists and Levi-Strauss (see below).

His assumption that criticism is equivalent to absolute separation is further suggested by Chang's failure to observe the following possibilities with regard to Levi-Strauss' treatment of Jung. 1.) Levi-Strauss was incorrect in his characterization of Jung's mature position or; 2.) the critique was set up as

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a straw man as suggested by D'Aquili (Op. Cit.). In fairness to Levi- Strauss we must assume that the problem proceeds from an early misreading that was never corrected by further investigation.

Chang next attempts to cover substantive issues but focuses almost solely on the idea of oppositions.

The doctrine of opposites appears on multiple levels in Jung. It is the method by which consciousness moves and grows. It expresses the essential complementarity between the conscious and the unconscious. It is the path whereby unconscious elements grow to conscious awareness. It is the heart of the symbolic process.

> As opposites never unite at their own level (*tertium non datur!*), a superordinate "third" is always required in which the two parts can come together. And since the symbol derives as much from the conscious as from the unconscious, it is able to unite them both, reconciling their conceptual polarity through its form and their emotional polarity through its numinosity (1959a, para 280)

There is another dimension to the polarities in the psyche, expressed as the essential bi-polarity of the archetypes and the ease with which an element is transformed into its opposite. This was observed by Levi-Strauss when he noted:

> The inability to connect two kinds of relationships is overcome by the positive statement that contradictory relationships are identical inasmuch as they are both self-contradictory in a similar way (Ibid., p. 180).

And similarly for Jung when he noted that:

> "Every psychological extreme secretly contains its own opposite, or stands in some sort of intimate and essential relation to it. Indeed, it is from this tension that it derives its particular dynamism (CW 5, para 381)."

For Jung, as for Levi-Strauss, the psyche moves by compari-

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sons and contrasts. Levi-Strauss has imagined them in several dimensions, but Jung adds the dimension of conscious/unconscious. According to Chang, this dimension does not exist for Levi-Strauss because the unconscious perfectly guides the conscious. One is led to believe, however, that this unanimity may be more a function of concrete cultures than of Western cultures.

According to Jung, the very abstraction that differentiates the western culture from the primitive, has alienated the Westerner from unconscious realities. By contrast, a member of a concrete or neolithic culture, for whom all things are signs-things with purpose and place, not mere abstractions, may never know the anomie and alienation that characterize much of the West. The possibility of this crucial difference in orientation seems lost on Chang.

Continuing, Chang fails to address the similarity in the structural dimension between Jung's collective unconscious and Levi-Strauss' non-personal unconscious, the similar identity between their personal unconscious and preconscious and the essential agreement as to the role of language in linear thought. He does not even consider an examination of the collective unconscious as he deems the concept unworthy of a scientist (p. 111). In his treatment of oppositions, he seems more concerned to refute the possibility of a teleological or meaning function in the dialectic than to acknowledge the similar and dialectic structure of both systems (pp. 107-109).

In dealing with Staude's attempt to provide a historical link between the French school of Sociology and the two thinkers, Chang casts off the possibility on the basis of Levi- Strauss having critiqued the members of the school. He fails to answer, or even consider Staude's attempt to forge a historical link, not on any substantive historical ground, but only on the ground that they were criticized or deemed outmoded (pp. 110-111).

It is unfortunate, that a writer of such energy as Chan should be so mistaken. As he has criticized D'Aquili for a faulty view of French sociology (based upon D'Aquili's apparent over-reliance upon Harris' text), so, he has made a similar error in relying perhaps more on anthropological hearsay

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regarding the theories of Jung than on the works themselves. Beyond one citation from the *Collected Works*, it would appear that his knowledge of Jungian psychology is secondary.

That there are significant differences in the approaches, methodologies and goals of Jung and Levi-Strauss cannot be denied. But a reasonable observer, not so beholden to a singular viewpoint as Chang seems to be, cannot help but see vast areas of agreement in their parallel discoveries regarding the objective structure of the psyche. One might suggest that Chang has failed through a very un-Levi- Straussian attachment to the emotionally charged content of the argument, not its structure.

Similarities Based Upon the Interpretations of Myth

Both Jung and Levi-Strauss were drawn to myth as primary data of human consciousness. For both, the similarities between the myths of all people identified them as providing special insights into the nature of mind. Like Levi-Strauss, Jung rejected the notion that myths are reflections or explanations of external phenomena. Unlike him, however, Jung saw myth as a projection of psychic processes onto the world of nature and society so that external myths and explanations reflect the structure of the psyche (1959, para. 7 ff.). This differs from Levi-Strauss in that Levi-Strauss seems only to see the dialectic and its algebraic permutations as perhaps the sole formal constraint upon sensory data.

Jung believed that myth was a product of the unconscious. Indeed, He saw myth as a vital spring out of the unconscious depths from which consciousness drew its life- blood. For a primitive, living in a mythically vital concrete world, the world was seen to be replete with meaning and significance.

> Myths and fairytales give expression to unconscious processes, and their retelling causes these processes to come alive again and be recollected, thereby re-establishing the connection between the conscious and the unconscious ... (1959a Para. 280)

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Jung, like Levi-Strauss, saw that myths were composed of constituent elements which were discrete from language though expressed by it on some level and that these elements had a grammar of their own. For Jung these elements were the motifs, or mythemes which reveal the archetypes and their various expressions. They were universals that appeared independently of cultural transmission. These centers of psychic organization took on for Jung a central structuring role in the psyche. As the archetype is projected on the material world, that world is categorized, separated, divided and known. If the work of the unconscious could be described in terms of bricolage, then the bricoleur's materials would be marked, for Jung, not by past uses so much as archetypally; by the pattern projected upon them from within. It is the archetypal dimension that ultimately determines their use and application. (1959, para 259 ff). Like Jung, however, Levi-Strauss saw the constituent elements as universals.

In accordance with what many authors found to be a frustrating and incomprehensible approach to the analysis of myth, Levi-Strauss held that the order of mythic elements and the composition of various versions were essentially arbitrary, and that the best analysis came from the analysis of multiple versions. Just so, Jung notes:

> ... The rule in Mythology is that typical parts of a myth can be fitted together in every conceivable variation, which makes it extraordinarily difficult to interpret one myth without a knowledge of all the others (cw 5, para. 312).

That Levi-Strauss, like Jung has noted the appearance of consistent themes in mythical material is shown by his comparison of Myth and Music in the book *Myth and Meaning*. There he recalls that while listening to Wagner's Ring Cycle he noted the reappearance of a theme on three different occasions:

> We can then notice that, on the three different occasions, there is a treasure which has to be pulled away or torn away from what it is bound to. There is the gold, which is stuck in the depths of the Rhine; there is the sword, which is stuck in a

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> tree, which is a symbolic tree, the tree of life or the tree of the universe; and there is the woman Brunhilde, who will have to be pulled out of the fire. The recurrence of the theme then suggests to us that, as a matter of fact, the gold, the sword, and Brunhilde are one and the same... (p. 48).

This passage immediately recalls the 1967 statement with regard to the different material and sociological levels of analysis in the Myth of Asdiwil that:

> ... the levels cannot be separated out by the native mind. It is rather that everything happens as if the levels were provided with different codes, each being used according to the needs of the moment, and according to its particular capacity, to transmit the same message (Ibid., p. 14).

The Wagner-inspired passage suggests that Levi-Strauss is open to the possibility of considerably more levels of significance than he has yet analyzed.

The central difference between these thinkers in their approach to myth analysis appears to be this: Jung is panchronic in his perspective; Levi-Strauss is strictly synchronic. For Jung, the Myth represents the ontogenetic and phylogenetic unfolding of personality. It reveals the past and holds out the hope of a goal of self realization. It is always personalized to the extent that it must carry meaning to the individual to whom it has been given. As revelation of the underlying patterns functioning in all the world of humanity, the myth carries personal meaning to each person with whom it comes into contact. The myth also is seen as a revelation of the diachronic and synchronic patterns that structure the psychic world. It is a map of otherwise unknown processes, potentials and strivings in the human psyche.

For Levi-Strauss, the myth is also an expression of the unconscious, but the unconscious conceived in an instant and viewed in cross-section. His approach embodies the linquistic requirement that synchrony be emphasized for true understanding. What he lacks in richness of detail and developmental logic, Levi-Strauss provides in structural precision that is

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often lacking in Jung.

Summary

There lies at the heart of the psyche an unconscious element that structures behavior, but which in and of itself, can never become conscious. It is common to all people and exists at the level of biology. Jung called it the collective unconscious, Levi-Strauss, the unconscious. Somewhat more closely allied to consciousness there exists a layer of contents which have been forgotten, repressed, or for some other reason remain below the level of consciousness. In general, these contents have been marked by use, tagged by social convention, or otherwise ordered so as to identify them with certain kinds of patterns that emerge between the interplay of consciousness and the unconscious infrastructure. This level was called by Jung the personal unconscious, and by Levi-Strauss, the preconscious. Both authors recognize that the ordering of the contents of the repressed/forgotten unconscious materials are by means of a dialectic between various levels of meaning and structure.

From a comparative viewpoint, there are some obvious similarities in their approach to myth. Both view myth as arising out of the unconscious. It is built of persistent structural units. It exists outside of time but interacts in dialectic fashion to assume its particular form in any given culture or for any given individual. A central portion of its structure on multiple levels is based upon opposition. The Myth has multiple layers of meaning, but always the same structure for similar myth groups.

The crucially significant differences in perspective between Jung and Levi-Strauss, seem to center about their material and their temporal approach to the material. Levi- Strauss abjures subjective data. Levi-Strauss saw conscious materials as unreliable. Even dreams, when filtered through the conscious memories were worthless as either the random orderings of the days activities, or unreliable through the interference of conscious processes. For Jung, on the contrary, dreams, myths and the whole of human behavior provided clues to the

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structure of mind. Subjective experience was important data for the confirmation of the continuing formal patterns which he discovered at the roots of the human psyche.

The two are finally distinct with regard to their temporal approach. Levi-Strauss, in true structuralist fashion observes only the synchronic data. His perspective takes a slice of the phenomenon in time, observes with great logical precision the systemic relationships that order the elements, and reduces them to mathematical precision. It is linear, causal and reductive: a science of the concrete in the best sense of the word. Jung, despite a similar interest in synchronic analysis, moves his analysis into multiple dimensions. Although he shares the structuralist infrastructure with Levi-Strauss, it is overlaid with elements of affective organization, content specific variables, and a truly systems oriented panchronic perspective. These differences, however, represent different logical types and exist on logical levels of analysis apart from the similarities of infrastructure that is common to both. In contrast to the linearity of Levi-Strauss' constructions, Jung is acausal, non-linear and relies heavily on subjective data. His implicit systems orientation drives him to a dynamic rather than a static representation of the psyche and requires him to inhabit multiple levels simultaneously.

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KASHUBIAN RELIGIOUS CUSTOMS IN THE HEL PENINSULA, POLAND

Tadeusz Dzierżykray-Rogalski
Polish Academy of Sciences

The pre-Slavic Kashubian-speaking peoples of the Peninsula of Hel, in northern Poland, show a physiological similarity to the peoples of southern Sweden, and although ardent members of the Catholic church still practice rituals on All Souls' Day the origins of which can be traced back to pre-Christian times when dead ancestors were remembered by candle rituals widely throughout the Indo-European world.

Hel Peninsula in the northernmost part of Poland is a narrow ridge of land, 34 km long, between the Baltic Sea and the Gulf of Gdansk (Danzig), and is only 950 meters wide at its narrowest point. It has been inhabited for centuries by a pre-Slavic Kashubian population comprised mainly of fishermen and their families. Up to the Second World War the peninsula villages of Chałupy, Kuźnica, and Jastarnia, had undergone considerable Germanization, starting in the 19th century and proceeding rapidly during the Second World War. However, this did not destroy all elements of the ancient culture, although those that survived are closely linked to the Catholic religion. The Kashubian country, together with neighboring Pomerania, comprises virtually the whole of the Polish seacoast, but has maintained identifiable aspects of its ancient culture, although as a result of modern communications, mass-media and especially television, the Kashubian language is disappearing. The small villages have also become popular seaside resorts and this is contributing to the destruction of the local language and customs.

Between 1954-1970, however, an Anthropological-Medical Research Center was established in Jastarnia, and this recorded many of the vanishing phenomena. Research carried out there revealed that the physiological and racial structure of the autochthonous population of the Hel Peninsula is very similar

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Figure 1 (left). Interior of the fishermen church in Jastarnia (c. 1935). Pulpit with fisherman motifs sculptured by the Pomeranian sculptor Alfons Cichosz. Photo: J. Strzelecki.

Figure 2 (right). Maria Konkel - the picture-bearer "belonging" to the Saint Mary picture, takes her leave of the picture on the day of her marriage in 1975. Photo: T. Dzierżykray-Rogalski.

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to that of the southern part of Sweden. This testifies to the ancient ties that linked the peoples who lived around the shores of the Baltic Sea.

In this present note I would like to refer briefly to the survival of a pre-Christian religious custom performed up to our times as part of the Catholic ritual in Jastarnia and other villages on the Hel peninsula. The local population is very strongly supportive of the Catholic Church, so most local customs have survived in association with Catholic ritual. Notable amongst these are religious processions at which standards and holy images are paraded outside the Church. These may be carried only by pious virgins.

Each of the approved young unmarried girls is assigned particular standards or pictures. These girls are called "picture-bearers" and must wear a special traditional dress. To be chosen as a picture-bearer is an honor that is held in high esteem, and the privilege continues until the girl gets married. Before marrying, a picture-bearer is required to nominate her successor. Small girls also participate in such processions with the responsibility of keeping the ribbons tied to the holy picture. It is usually from such girls that future picture-bearers are selected.

One of the most beautiful customs of the Hel Peninsula is the procession on All Souls' Day. This winds its way to the sea shore. There the annual Mass is said for the souls of the fisherman of the community who have been lost at sea. All the inhabitants of the village participate at this Mass once each year notwithstanding the wind and rain typical for this season. At the beach, special holes are dug in the sand for the candles lighted up for the souls. The families of lost fishermen lay wreaths and bundles of flowers upon the sea.

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IT COULD BE *NEO*-LYSENKOISM, IF THERE WAS EVER A BREAK IN CONTINUITY!

Volkmar Weiss
German Central Agency for Genealogy, Leipzig

The Problem

"It is a remarkable fact that in recent years the most effective opposition to the study of human evolution has come not from religious fundamentalists and the political right, but from biologists and other scientists who identify themselves with the radical left. The focus of these critics was on the inheritance of intelligence ...." So wrote E. O. Wilson in 1978. Meantime, his opponents, R. Lewontin, S. Rose, and L. J. Kamin (1984), affirmed that the aim of their "campaign against IQ and class society" was "to create a society of greater social justice, a socialist one." Trained as a natural scientist in an East European socialist country (the GDR), where he also had to pass compulsory examinations in Marxism-Leninism in order to qualify, the author may be forgiven for wondering what will result from the injection of socialist political aims into biological and social science in Western universities. Even in East Germany, after experiencing first racism and then Lysenkoism, most scientists learned to adhere strictly to an uncompromising ethic of objectivity.

However, the implications of human behavioral genetics (or psychogenetics as this field is called by Russian and East European authors) clearly extends beyond natural science. Recognizing that even the best scientists may be influenced by their personal experiences, the author believes that he has something to add to the continuing hereditarian-environmentalist debate. The security service of East Germany (the Stasi) prevented this article from being written eight years earlier. Now, after the reunification of Germany, the arguments it contains may be freely expounded by a citizen of a democratic society.

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Vsevolod Nikolajevič Stoletov

In August 1974, the Second Conference of the Pedagogues of the Socialist Countries was staged in East Berlin, chaired by Margot Honecker, wife of the East German Communist Party leader and Minister of Education, and Gerhart Neuner, President of the Academy of Pedagogical Sciences of East Germany. One of the main contributors to the program was Neuner's colleague, V. N. Stoletov, who since 1972 had held the position of President of the Academy of Pedagogical Sciences of the Soviet Union, and from 1951 had served in top administrative positions as Minister of Education and Higher Education under Stalin, Khrushchev and Brezhnev, thereby winning no less than three Lenin medals (compare *Sovetskaja Bolschaja Encikopledija*, Moscow 1976, p. 533). Speaking with such powerful authority, Stoletov (1974) declared:

> "There are biologists who support the following hypothesis of the creation of uniqueness: In the process of fertilization two gametes are melding together, from which results a unique genotype as a hereditary basis. For its development the unique genotype needs an unique environment (including the family and schools), corresponding to its range of possibilities. If there is not such an environment, the genotype will not realize its promise. Hence, the uniqueness of the genotype is a basis for the uniqueness of a personality.
>
> This biological hypothesis is refuted by the majority of biologists. Social properties of humans, positive and negative ones, are not of biological, but of social origin.
>
> But the biological hypothesis corresponds with the spirit of bourgeois ideology... Bourgeois ideologists are satisfied with the prejudice, that a master can only be the offspring of a master, the intellectual of an intellectual, the laborer of a laborer. As it is the case in a society, founded on exploitation... The biological hypothesis of an unique genotype is a convenient masquerade of social injustice."

The one-sided stupidity of these few sentences is so great that even Richard Lewontin (1975) hardly deserves to be mentioned in the same breath as Stoletov. For Stoletov,

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Mendelian segregation seems to be *completely* unknown. Holding the degree of doctor of biological sciences since 1958, Stoletov should have known better.

The Marxist-Leninist Origins of Lysenkoism

The importance of the 1948 session of the Lenin Pansoviet Academy of Agricultural Sciences in Moscow is widely known to historians of science (Belardelli 1977). It was at this meeting that Lysenko and his roughly 700 supporters and claqueurs were given authority by the Communist Party to destroy the study of genetics throughout Communist-dominated East Europe and Siberia, denouncing true genetics as reactionary "Mendelism-Morganism." The gathering ended with a final address of salutation to comrade Stalin. In the ensuing campaign some 200 Soviet geneticists lost their lives under extraordinary circumstances (Medvedev 1969).

The original proceedings of this ill-famed session (see English translation 1951) were coedited by I. I. Prezent and V. N. Stoletov, both active participants in the conference who presented their own papers immediately before the concluding address – which was made by T. D. Lysenko himself. Stoletov declared:

> Lysenko told us that from the works of our teachers of Marxism-Leninism we cannot only deduce the general guiding ideas for studying the variability of inheritance, but also concrete hints concerning the origin of such modifications .... The experiments of the followers of Michurin show in a convincing way that there is no Mendelian segregation. The inapplicability of the Mendelian rules can even be proven by experiments with Drosophila .... No maneuver of the Mendelists is able to rescue the infertile unscientific theory of chromosomes from complete unmasking .... From the point of view of practical utility Mendelism was a vacuum in the past, is a vacuum in the present and obviously will be a vacuum in the future."

Thus spoke comrade Stoletov in July 1948, as deputy director of the Institute of Genetics of the Academy of Sciences.

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He already held the presidency of the Timirjazev Academy of Agriculture, whose former president V. S. Nemtshinov spoke in opposition to the Lysenkoists and therefore was attacked directly by Stoletov, the second highest ranking representative of Lysenkoism and Lysenko's most fervent propagandist. The seemingly irresistible rise of this man, born in 1907, is remarkable.

The first Russian edition of Stoletov's book *The Fundamentals of Michurin Biology* (see English edition 1953) appeared in 1940 and was soon translated by the state into several languages. Then, in 1950, Stoletov was appointed Deputy Minister of Agriculture responsible for the entire Soviet Union. Although he had published nothing about public education, he was appointed Minister of Higher Education in 1951, and held authority in this and similar administrative positions until 1972. His career was even more remarkable in that his background was concealed and known only to a few specialists who, for fear of persecution by the security services, could never make the information public. To my knowledge, this paper is the first which has ever dared to disentangle his background.

The great struggle between Lysenko's agrobiology, proclaimed as "socialist biology," and classical genetics began as early as 1936. In that year, at the instigation of Stalin himself, all testing of intelligence was forbidden in Soviet schools (and up to the time of this writing this order has never been officially canceled in any East European country). Nobody ever understood the intrinsic logic of this simultaneity of events better than Stoletov. Because IQ tests measure inter-individual differences, and human genetics is the science of the inheritance of inter-individual differences, when both IQ tests and human genetics are forbidden (or even simply discredited) what cannot be measured cannot be discussed scientifically: hence it is not possible to challenge the thesis that all men are created equal. Since 1936 to the present, the study of the genetic component of intelligence has remained taboo in the Soviet Union. About 1980 some twin studies investigating the heritability of IQ were published in Moscow, demonstrating a

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heritability of 0.78 (Lipoveckaja, Kantonistova and Chamaganova 1978), but further research was stopped as soon as Western authors began to comment on these results.

The official resurrection of classical genetics began in the Soviet Union in 1965, following the fall of Khrushchev (Medvedev 1969). But research into human genetics still had difficulty in becoming acknowledged as a legitimate field of research. Even now, in 1990, there is no single journal dedicated to human genetics that is edited in East Europe. Even greater obstacles exist where human genetics are studied in relation to psychology and psychiatry. Mental testing for clinical purposes is no longer unknown, but the Soviet reviewer (Moskalenko 1985) of the monograph "Psychogenetik: Humangenetik in Psychologie und Psychiatrie" (Weiss 1982a) – who expressed a very favorable opinion with respect to the psychiatric side of this volume – seemingly considered it wise to ignore the chapters on IQ and "testology" (compare also Gurevic 1980) which comprised the most important part of this book.

Any revival of orthodox communist ideology is always accompanied by attacks against human behavior genetics. In the course of a power struggle in Communist China, Lin Piao was accused in 1974 of preaching "a theory of innate genius" (Li 1974), which was described as being rooted in Confucianism:

> The question whether man's intellect and talents are inherent and attributed to his natural make-up or they are acquired after birth through learning, that is, whether they have class nature or social practicability, has given rise to much controversy between the two classes .... Although some classical authors of Marxism did make mention of "genius" in their works, yet what they meant by "genius" is absolutely different from the "genius descended from heaven", boosted by Confucius, Lin Piao and their like .... Marxism maintains that the forming of a genius does not depend on a certain person, but on the Party, the vanguard of proletariat, that is, on mass line, on collective wisdom .... Lin Piao claimed that this ability and knowledge were different from others because they originated from his

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> parents, in other words, he inherited them from his ancestors. This is a downright lie, aiming at deceiving not only himself but others also. The core of the problem consists in what he meant by "ancestors" and "inheritance". If by ancestors he meant the ancestors of mankind, that is the ancestors from "man-like ape" to "ape man", then the brain of man had indeed gone through a number of leaps .... Some people might use lame arguments by suggesting that although ability cannot be inherited, yet the potentiality of acquiring ability may be derived from ancestors. However, the difference between porter and philosopher refers to the fact .... that differences are brought about by the kind of training and education children have received during the time of growth and development .... The theory of innate genius, pushed by Lin Piao, is reactionary politically, idealist ideologically and simply a variety of the notorious eugenics. Lin Piao, while flaunting the banner of innate genius, was actually committing heinous fascist crimes .... Armed with Marxism, Leninism and Mao Tse-tung thought, the progressive proletariat and the broad masses of the working people will surely carry on a severe criticism of Lin Piao's theory of innate genius, to get rid of its poison.

And in the Soviet Union, Tschernentio (1983), the last old man of the proletarian vanguard, asked (as a General Secretary of the Communist Party) that: "Can a concept be held scientific, that explains mental properties by the existence of genes and denies that such properties are caused by the social environment?"

Stoletov (1973) had good reason to boast:

> On July 4, 1936, the Central Committee of the Communist Party of the Soviet Union accepted a special resolution against the pedagogical deformations in the system of education. Reading this resolution today, one will be convinced of the gigantic foresight of the Communist Party.

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The Failed Attempt to Introduce Psychogenetics into the GDR

Doubts about Stoletov's gigantic foresight were widespread in East Germany. The GDR was the only East Bloc country wherein classical genetics, as used for the applied purposes of plant and animal breeding, was never completely suppressed by Lysenkoism. Whether this was due to the courage of Hans Stubbe, director of the Central Institute for Cultivated Plant Research in Gatersleben and President of the Academy of Agricultural Sciences since the post-War years, or more due to the fact that an influential member of the Politburo was a son of Correns, the rediscoverer of Mendelian inheritance, historians of science will find out. But otherwise, as elsewhere in Marxist-dominated Central and Eastern Europe so also in East Germany, human genetics and mental testing were officially nonexistent.

The author remembers when - as a boy of 14 – during a blizzard in the Saxonian Ore Mountains in the winter of 1959, he had to rescue cows from open-air sheds where they were kept according to the rules of applied Marxism – much open-air, not much feed, but the milker strongly educated in Marxist doctrine (and as result of all this, nearly no milk). When the veterinarian of our village criticized this dogmatism, the district journal of the party accused him of defending reactionary opinions. This manifest contradiction between pretension and reality instigated the author to search for the deeper roots of behavior and to study genetics. He found that until 1965 the official curriculum in genetics was a curious mixture of Lysenkoism and classical genetics, and that a student had to use his own common sense.

Translated by H. A. Freye (as already published in a Russian translation as early as 1915 in pre-Marxist Moscow) there appeared in 1968 in *Jena* a German translation of Curt Stern's second edition of his *Principles of Human Genetics*. Chapter 27 of this influential book is dedicated to mental characteristics and some data on IQ distributions among relatives are given. In Berlin in 1969, Hans Grimm, professor of physical anthropology, proposed that this author should

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write a thesis on the inheritance of mathematical talent. To conduct an empirical study in this area, official permission of the administration was needed, and the young man was granted such permission during a period of ideologic softening. Because IQ testing was impossible, the study had to rely on questionnaires. But in Spring 1970, the security service became aware of the questionnaires, all of which were immediately confiscated. Only due to the support of some farseeing scholars (to mention especially Klaus Korn, Director of Educational Planning of the Academy of Pedagogical Sciences, who was eager to produce rational arguments against the fruitless dogma of the Stoletov variety) made it possible to reach an agreement, by which the security service permitted a statistical analysis of the questionnaires to be done on the condition that the results were kept in a secret archive. Under such restrictions the publication of research results was impossible. However, this obstacle was also overcome when Hans Stubbe, editor of *Biologisches Zentralblatt*, in 1972 published the resultant data on the inheritance of mathematical-technical giftedness. In the same year the first session of East German human geneticists was held in Gatersleben, and Weiss (see Weiss 1982a) was able to present the data in Table 1.

The interpretation of Table 1 and other data (Weiss 1973) reveals that a major gene locus of general intelligence, with gene frequencies of 0.20 and 0.80 respectively, could explain the empirical distributions by Mendelian segregation. From the Hardy-Weinberg law the frequencies of the hypothetical genotypes can easily be calculated, corresponding to the following median IQs: IQ 94 and IQ 130 for the homozygotes, IQ 112 for the heterozygotes. Because no available method allows a complete separation of these types, in Table 1 expected ranges for IQ and percentages are given. If we consider the probability of a single individual belonging to a specific type, a Mendelian analysis can be carried out.

With respect to human behavioral genetics in the non-medical field, the intellectual climate in East Germany grew unfavorable again in 1974 and remained so in the following years. As already mentioned above, in 1974 Stoletov was

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Table 1. - Marriage combinations of sibs of parents of highly gifted probands (median IQ 130; hypothetical genotype M1M1) and distribution of collaterals under the assumption of Mendelian segregation at a major gene locus (gene frequency M1 = 0,20) of general intelligence (data from Weiss 1982a, p. 108)

Marriage combination	Percentage according to Mendelian rules with IQ 119 and higher expected range	empirical value	Total number of cousins of probands with IQ 119 and higher	below
I (both spouses with IQ 119 and higer)	75 - 100	81	47	11
II (one spouse with IQ 119 and higher)	50 - 75	62	172	105
III (both spouses below IQ 119; at least one spouse above IQ 104)	25 - 50	30	147	339
IV (both spouses below IQ 105)	0 - 25	12	56	426
n (1)			422	881
			32%	68%

(1) Two third of all cousins were citizen of East Germany, one third of West Germany

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personally present in East Berlin. In 1970 nobody in East Germany was aware of the new wave of hereditarian-environmentalist debate starting in the United States. But by 1974 Marxist dogmatists were inspired once again to search for and hunt down their ideological enemies, the behavioral geneticists.

Despite this new pressure, during the 1970s both medical genetics (Freye 1975) and differential psychology (including, of course, IQ tests; see Guthke 1978) came to be recognized as established fields of research in East Germany. In 1979 Weiss (see Weiss 1982b) obtained permission to test several forms in special schools for the highly-gifted. For a number of very simple nonverbal intelligence tests he found a linear relationship of 2 : 3 : 4 in raw test scores and processing time between IQs 94, 112, and 130. From these findings this author hypothesized that there are types of general intelligence with discrete true scores, the heterozygotes being exactly in the mean of the difference of the means of the homozygotes. Analogous to many other results in biochemical genetics we can assume that these discrete differences in central processing time result from an underlying polymorphism in the activity of one rate-limiting enzyme. The empirical data strongly support the hypothesis that the quantitative effects of the alleles are additive in a simple way.

In 1980, the manuscript of the monograph "Psychogenetik" (Weiss 1982a) was complete. Now some fierce dogmatists were discovering that a cuckoo's egg had been laid in the nest of socialism. One example: S. Rose asked his East German colleague, the neurochemist professor D. Biesold at the Karl-Marx-University of Leipzig (personal communication by Biesold), whether there was no means of stopping further publications by Weiss, because such publications printed in a socialist country were particularly disadvantageous to the propaganda of the radical left in the Western world. Consequently, in 1981 a battle raged in East Germany between proponents supporting the publication "Psychogenetik" and its Marxist adversaries. The main opponent, Walter Friedrich, director of the Central Institute of Youth Research in Leipzig,

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wrote an article (1981) entitled "The Legend of Genetic IQ" (dedicated to the 70th birthday of W. Hollitscher, a fierce former partisan of Lysenko), and the official party daily *Neues Deutschland* (July 11, 1981), with a one-million circulation, published his paper entitled "The Legend of the Higher IQ of the Rich. A Cynical Formula of Inheritance for Justification of all Inequality" (see reprint in Friedrich 1982). Weiss and his manuscript were not attacked by name, but by argument, and the aggressivity of this article, reviving the nightmare of Lysenkoism, was interpreted by a large number of specialists as a threat to rational science as a whole. Therefore, for October 6, 1981, both the president of the Academy of Sciences of East Germany and the President of the Academy of Pedagogical Sciences sent invitations to well-known specialists in the fields of genetics, human genetics, neurobiology, ethology, psychology, pedagogics and even philosophy and sociology to attend a seminar. The chairman of this seminar was Gerhart Neuner (already mentioned above in the Stoletov section), President of the Academy of Pedagogical Sciences. Weiss was given a fair chance to defend his case. In the following month, permission to print was obtained from the censors. 1981 was no longer 1948.

Moreover, censors in Communist countries are generally only people who are not interested in doing more work than necessary, and therefore the original version approved by them was never compared with the text that was finally printed. Because of this, a courageous author has the possibility of inserting new pages into the galleys and publishing data and opinions which had never passed censorship. To cite an example (Weiss 1982a, p. 109), the author was able to insert the following sentence in the published version, which had not been approved by the censors: "In a representative sample (n = 6000) of East German university students raised by the Central Institute of Youth Research (1980), in 56% of all families at least one parent has an academic degree, in 33% both parents." This one fact from a secret research program disproved the official Marxist dogma that the majority of all university students in socialist countries are the children of

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laborers and peasants.

Because Friedrich and his security service co-worker Harri Schulze (see 1986) were unable to stop the publication of "Psychogenetik", they accused their subordinate Weiss (as was fashionable in the wake of the Burt affair) of forgery of data with the intention of fleeing East Germany for the West. With the aid of such calumnies, at the end of the year 1982 Friedrich sought and obtained the backing of high-ranking officials of the Communist Party and all further research in psychogenetics in East Germany came to an end.

Hans Eysenck (1982) has discussed the relation between Marxist ideology and the measurement of IQ and claimed that Weiss' East German research would show that Marxism and IQ were not an intrinsic contradiction, as claimed by the political left in the West. The irony of Eysenck's arguments was that at that very time the cited author was under the threat of arrest and had already lost all possibility of doing further empirical work or of defending his field of research. Indeed, his friend, the mathematician Wolfgang Hartmann, was arrested and sentenced to more than three years imprisonment (see his autobiographical record; Hartmann 1988). In 1980, the 22nd International Congress of Psychology had been held in Leipzig and the Stasi had asked Hartmann for information about a gathering of scholars from the East and West in Weiss's home at Rietschelstrasse 28. Hartmann refused to give this information. Under such pressures, he requested permission to travel to West Germany and was arrested.

After 1984, Weiss was forced to work in a quite different field (for results, see Weiss 1990). What follows is the usual story of life and resistance under totalitarian conditions. In order to be published abroad, any new theoretical contributions had to be smuggled out of the GDR. As a consequence of this two versions of the "quantum mechanics of intelligence" appeared, one in England (Weiss 1986), the other, circulated by friends under a pseudonym in the United States (Weisman 1986, compare also Weiss 1990). Immediately after the appearance of "Psychogenetik" (Weiss 1982a), a West German research group (Frank 1985; Lehrl and Fischer 1988) studying

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information psychology (see Eysenck 1906 and 1987) could confirm Weiss's prediction that in terms of information entropy (measured in bits of short-term memory storage capacity, compare the comment by Garfield 1989) the heterozygotes are exactly between the homozygotes (for more detail see Weiss, Lehrl and Frank 1986). In the eighties it was in East Germany a sign of personal courage to defend the study of human behavioral genetics while citing Weiss (Hagemann 1988; Tymnik 1990). A total of thirty-three reviews of *Psychogenetik* were published in various parts of the world, but the editors of East German journals, such as *Zeitschrift für Psychologie* and *Wissenschaft und Fortschritt,* did not dare to publish any such critiques.

On the morning of October 9, 1989, a Monday, comrade W. Friedrich met comrade Egon Krenz, chief of all security forces in East Germany, in Berlin, and told him that according to the enquiries of his institute the shooting of demonstrators in Leipzig would be the beginning of a violent anticommunist revolution. In order to rescue the privileges of the party, a peaceful outlet had to be found. What followed is history. The Each-Monday-Revolution of Leipzig overthrew the dictatorship. Among the hundreds of thousands of peaceful demonstrators was the author and his family. On October 16, 1990, at the Martin Luther University in Halle, the author was able to defend the monograph "Psychogenetik" (Weiss 1982a) as a second thesis (in German "Habilarbeit" or in East Germany "Diss. B.", necessary as a prerequisite to obtain the title of Professor).

Discussion

Concerning the inheritance of IQ, in 1974 Turner wrote that "the announcement of a scientific finding in this realm will in fact alter the behavior of the system being investigated." However, such findings played no role in the recent breakdown of Marxist rule in East Europe. The misunderstanding of the nature of man by Marxist ideologues was itself responsible for the economic and bureaucratic distortions which caused the collapse of the Marxist governments. Ironically, in East

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Germany the educational system was in practice more hierarchical and élitist than in some territories of West Germany governed by Social Democrats (such as Nordrhein-Westfalen) who favor comprehensive schools ("Gesamtschulen") in contrast to the three level school system found in territories (such as Bavaria) governed by liberal conservatives. Behind the successes of East German sportsmen and women was an extremely sophisticated system of personnel selection and educational placement (Weiss 1981), which egalitarian ideology always had difficulty in justifying. Physical abilities are not the same as mental abilities, and are quite different from IQ, was the explanation most commonly given.

The Marxist sociologist M. Lötsch stated (1988, p. 149); "There are three large groups in which the probability that their children will remain members of the same group is greater than the probability that they might become members of another group: One group has low education and qualifications, the second has high qualifications (and college and university background), and between these there is a third group of medium education (including laborers holding qualified jobs)." Lötsch, aware of the results of Table 1 and many other empirical data for the past seventeen years, affirmed the facts. However, faithful to Marxist ideology, he concluded that: "The described mechanism can only be abolished under the condition that its final roots are abolished which means abolishing the division of labor from which the different levels of intellectual performance result." More than forty years later, as George Orwell described in his "Animal Farm", the economic fruits of such intentions have now been harvested all over East Europe.

To a Marxist who sees human diversity and social inequality in everyday life, the abolition of social and economic inequality would theoretically solve the problem of diverse abilities. His common sense tells him, however, that in practice diversity would remain. Of course, to a Marxist diversity of mental abilities has no genetic background. He admits that physical traits can have such a background; but must deny that mental differences have a genetic background. To a Marxist,

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diversity of mental differences can only be the product of ontogenetic development and social environment. Faced with oligophrenic children, he is again obliged to admit that such cases can be "influenced by heredity;" but he must still argue that IQ in the normal range cannot. In consequence, the debate over IQ has become the last stronghold of Lysenkoism. A Marxist who admits that there is a genetic component to IQ is giving up his faith. By contrast, the geneticist's view of human equality was well summarized by Dobzhansky (1966): "All men should be equal – in order that they can grow to be different."

In the seventies, the Russian geneticist Dubinin (see Belardelli 1977), himself a victim of Lysenko, claimed that man's biological evolution had ceased. This message was hailed by Marxist philosophers, but in vain. Evolution is still at work, not only under the grip of hunger, AIDS, and different susceptibility to new drugs, but also as a result of disparity in the numbers of children born to different social groups and strata (see Weiss 1991). Dubinin's declaration that human evolution had ceased was only one of the many conscious and unconscious counter-strategies of Marxist ideology against progress in understanding human biological evolution.

It is nearly incredible how many obstacles have been piled up, even by research workers in the field themselves, in order to slow our understanding of the causes behind IQ. Every textbook says that intelligence scores are normally distributed. Jensen (1979) is citing this in support of a polygenic background of IQ. Intelligence, however, is not and never has been normally distributed. A sketch, for instance, of the distribution of raw test scores for the subtest Perceptual Speed of Thurstone's Primary Mental Abilities, shows a distribution skewed to the right and far from normal. Even more surprising is that the shape of the distribution is the same for all raw scores of simple nonverbal tests measuring mental speed (Weiss 1986). In such tests the absolute performance of IQ 130 subjects is always about threefold higher than that of IQ 94 subjects, and not only 30 or 40% as suggested by the IQ difference. IQ distributions are normalized by definition only; in reality the

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scores of simple tests measuring mental speed and memory span, the two essentials of general intelligence, have never been normally distributed.

It is assumed among psychologists that the Mendelian approach is restricted to traits with clearly distinguishable phenotypic classes. But IQ is a quantitative trait being measured on a continuous scale. This is why the reigning biometrical doctrine seeks to measure all the variations in a character and then to partition the differences observed into fractions (variances, heritabilities) ascribable to the effects of genetic and environmental phenomena. The biometrical paradigm asserts that continuous variation implies the determination of IQ by many genes with small effects. Although the logical contradiction between one general factor and the assumption of many genes as its neurochemical equivalent seems to be obvious, the conclusion is rarely drawn that either the concept of general intelligence or the dogma of its polygenic background must be wrong. Metabolically the usual mathematical notion of small and additive effects of many genes for polygenic inheritance is violated by the hierarchical nature of biochemical conversions in the human brain. Certain enzyme-catalyzed reactions are rate-limiting for a pathway or are involved in more essential pathways than others. If appreciable variability of a trait is due to Mendelian segregation at a single locus (compare Table 1) we may speak of a major locus of that trait. Attempts at a Mendelian analysis of IQ, now still widely believed to be impossible, should be encouraged.

Whenever a high correlation between IQ and a psychophysiological or biochemical variable has been found by a research group, ten years later there will always be as much confirmations as non-confirmation of the original finding. It is one of the striking properties of an underlying major gene locus of general intelligence to provide an explanation why so many results with unsatisfyingly low correlations have never been replicated. If we sample only within the range of one genotype (e.g. a sample comprising only university students of mathematics and physics) then all the correlations between the

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various subtests of IQ, mental speed, memory span or average evoked potentials of EEG and biochemical parameters tend to toward zero (even heritabilities tend toward zero). The small remaining correlations are mostly the correlations of error scores in a broader sense and nothing else. The same applies if a sample includes only healthy probands with IQ below 104. If the sample is made up of subjects representing the genotypes in equal proportions, the empirical correlations will reach their maxima. And consequently, for a sample representative of the whole population, the correlations will be lower again (with the exception that the gene frequency would be 0.50).

Neo-Lysenkoist Techniques

If we examine the studies replicating or rejecting correlations with IQ, we will understand one more truth! A statistical meta-analysis of all this is urgently needed. There is too little understanding of this statistical problem by the general public to allow one to assert that some researchers have intentionally planned their studies in such a way that nonconfirmation could be the only result. However, it is always possible to devise a research methodology which rejects correlations with IQ. The Neo-Lysenkoists still have ample reserves, even under the guise of objective science.

It is curious, also, how important findings are sometimes hushed up. Beginning in 1983, three separate research groups (see Weiss 1987 or 1990 for references) reported significant correlations (around 0.60) between regional glucose metabolism rate of the brain and IQ. One would have expected that such extremely important results would be reflected in the media, leading to further research efforts as a consequence. But this has not happened. In the meantime, studies have also been published which do not confirm the correlations. And who dares to invest money and effort in a field where there is nothing to earn?

As a further consequence, most of such correlations are produced as a byproduct of medical research (usually in comparisons between healthy and mentally impaired groups).

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In nearly all cases the physicians are unaware of the implications of their findings and are frightened when they are accused of "reactionary science." As a rule, further empirical work in the same direction ceases as a result of self-censorship. One example: Already by 1979 a correlation of 0.58 between IQ and glutathione peroxidase activity (GSHPx), a genetically polymorph enzyme, had been found. In representative population studies a mean enzyme activity of about 24 U (GSHx/g Hb) was found. In contrast, 100 healthy university students had a mean of 40.5 U, which seems to be another argument for the association of high IQ with high GSHPx activity. In 1985, a polymorphism of selenium-independent GSHPx (glutathione transferase) was discovered which exhibits exactly the gene frequencies 0.20 and 0.80, respectively, and distribution properties of the wanted major gene locus of IQ (for detailed references see Weiss 1987). Another enzyme claimed to be involved in signal transduction and memory formation by many authors is protein kinase C. In 1989, Taniguchi and Pyerin published a paper entitled "Glutathione S-transferase is a[n] ... substrate of ... protein kinase C", of which the correlation of the latter with IQ is confirmed by Wehner, Sleight and Upchurch in 1990. What is still necessary to determine whether such correlations are "mere" coincidences is a systematic effort by an adequately funded research group. What is the major obstacle, the lack of money, lack of theoretical perspective, or fear of the radical left?

There is a lack of courage in the academic community. Too often the physician, specialized in the field of psychiatric genetics, or the psychologist who is promoting IQ tests, avoids consideration of the relationship between genetics and IQ, in order to avoid difficulties in their own career because the genetics of IQ is taboo. (As a counter-example read Von Schilcher [1988].)

The economic breakdown of socialism (or communism, as you like) will be followed by a final ideologic collapse (also in China), when the biochemical background of IQ is discovered and widely recognized. In open-class democratic and socially mobile societies, the connection of educational and social

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stratification with IQ has been a matter of fact for centuries, and nothing essentially will be changed by such a discovery. Do not misunderstand me: Social justice is needed, and income differentials are partially the consequence of social struggle and cannot not be derived simply from IQ. Men such as Lewontin, perceiving cases of social injustice within their world, have a different outlook than the author who himself had to face totalitarianism as an outflow of Marxist ideology. Objective science has always to steer between the Scylla and Charybdis of ideological temptations, and the individual answer will be different at the point of temptation. The real problem is not an honest aspiration for social justice, whether it be called socialism or not: it is totalitarianism and the terror of Lysenkoism (Tymnik 1990). The resistance to research into the genetics of IQ could be called Neo-Lysenkoism *if there was ever a break in continuity*. But there never was a break!

Summary

In the Soviet Union, the suppression of both genetics and of mental testing began simultaneously in 1936. In 1951, V. N. Stoletov, one of the most fervent partisans of Lysenko, became Minister of Higher Education of the Soviet Union and served in similar positions for more than 25 years. As a consequence, human behavioral genetics could never be established in the Soviet Union as a legitimate field of research. In East Germany, efforts to introduce the study of psychogenetics were supported by the academic establishment until 1982, but this promising beginning was suppressed by the dogmatists. Because IQ tests measure inter-individual differences, and human genetics is the science concerned with the inheritance of individual differences, when both fields are forbidden or discredited, what cannot be measured cannot be discussed scientifically and hence the dogma that all men are created equal can be preserved. This, without any break of continuity, is the logic underlying Marxist ideology in universities all over the world.

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RACE DIFFERENCES IN INTELLIGENCE: A GLOBAL PERSPECTIVE

Richard Lynn
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The world literature on racial differences in intelligence is reviewed from three points of view. Firstly, studies using intelligence tests indicate that Caucasoids in North America, Europe and Australasia generally obtain mean IQs of around 100. Mongoloids typically obtain slightly higher means in the range of 100-106. African Negroids obtain mean IQs of around 70, while Negroid-Caucasoids in the United States and Britain obtain means of about 85. Amerindians and the South East Asian races typically obtain means in the range of 85-95.

A second source of evidence comes from studies of reaction times which provide measures of the neurological efficiency of the brain. These studies show that Mongoloids have the fastest reaction times, followed by Caucasoids and then by Negroids. Thirdly, the races can be assessed for their contributions to civilization. Here the Caucasoids and the Mongoloids have made the most significant advances both in the foundation of the early civilizations and in more recent developments.

The existence of racial differences in intelligence has been known since the time of the First World war when tests given to large numbers of military conscripts in the United States revealed that blacks had an average intelligence level about 15 IQ points below that of whites. In the following decades there has been debate over the question of whether these differences have a genetic basis. This debate has largely taken place in the context of the differences in intelligence found in different racial populations in the United States. Genetic theorists have pointed to the high heritability of intelligence and the difficulties of formulating credible environmentalist explanations to explain the difference (Jensen 1972, 1973, 1980; Eysenck, 1971). Environmentalists have pointed to a variety of factors which they consider capable of explaining the low Negroid IQ, of which the most important are bias in the tests, the adverse social and economic living conditions experienced by blacks,

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discrimination and prejudice from white majorities and the historical legacy of slavery which has demoralized blacks and destroyed their family structure (Flynn, 1980; Jaynes and Williams, 1989; Mackintosh and Mascie-Taylor, 1985). Neither side has yet succeeded in convincing the other and the issue remains unresolved, although a recent poll has shown that the majority of experts now believe there is some genetic basis to the low black IQ (Snyderman and Rothman, 1988).

The purpose of the present paper is to consider the problem of racial differences in intelligence in a global perspective. Part one of the paper contains a review of the many studies which have been made of the intelligence of different races throughout the world. The principal question here is whether the world wide evidence supports the genetic or the environmental position.

In general terms the genetic theory requires that there should be a reasonably high degree of consistency of the intelligence levels shown by populations of different races in a variety of geographical locations. Thus, Negroids should universally have lower intelligence levels than Caucasoids and this difference should be found in Africa and the West Indies as well as in the United States and Britain. The reason for this is that the genes or alleles (alternative forms of genes) for low intelligence, if these exist, should be present in all Negroid populations and not merely in those whose ancestors were transported as slaves to the New World. Furthermore, Negroids in the United States and Britain are nearly all Negroid-Caucasoid hybrids (Reed, 1969). Their Caucasoid genes should, on the genetic hypothesis, raise their intelligence level as compared with the pure Negroids of Africa. Hence the genetic theory demands that African Negroids should have lower intelligence levels than the Negroid-Caucasoid hybrids of the United States and Britain. Whether or not this is the case can be regarded as a test of the genetic theory and any studies showing that pure African Negroids have higher IQs than American or British Negroid hybrids would falsify the genetic hypothesis.

A similar degree of consistency of intelligence levels should

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be found for all races if the intelligence is largely genetically determined. The intelligence of Caucasoids should be approximately the same, whether they live in the United States, Britain, Europe, Australia or New Zealand. The same consistency should be present in the third major race of mankind, the Orientals or Mongoloids, who are present not only in their native habitat of north east Asia but also in the United States and Europe. Hence a world wide examination of the consistency of racial differences in intelligence would provide a perspective on the genetic and environmental theories which is lacking in the studies carried out in the local contexts of the United States and, more recently, in Britain.

Part two of the paper deals with the question of whether the racial differences in intelligence as measured by intelligence tests are also present in reaction times, i.e. the speed of response to simple stimuli. The interest of this question is that recent work has shown that reaction times are a measure of intelligence and appear to represent differences in the neurological efficiency of brain processes (Jensen, 1982; Eysenck, 1982). A positive finding of racial differences in reaction times would rule out many of the explanations for the intelligence differences advanced by environmentalists such as bias in the tests, the legacy of slavery and so forth, and would point to a genetically determined neurological basis for the differences. Whether or not there are racial differences in reaction times which run parallel with those in intelligence therefore provides a further test of the genetic and environmental theories.

Part three of the paper considers the racial differences in the foundation and advancement of civilization. The establishment of civilization required numerous discoveries such as the invention of writing and arithmetic and these must have been due to the work of highly intelligent individuals. This part of the paper considers whether the racial differences in the establishment of civilizations are the same as those found in the performance of intelligence tests.

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Intelligence Test Performance

Intelligence tests were developed in the first two decades of the century and in the following seventy years numerous studies have been published of the intelligence of different peoples in many parts of the world. The principal studies have been collated and classified by the race and are summarized in Tables 1 through 6.

Intelligence was initially conceptualized as a single entity quantified by the intelligence quotient and many studies have reported racial differences in terms of a single IQ. The theoretical basis for representing intelligence in terms of a single IQ is Spearman's (1927) work identifying a general factor present in all cognitive tests and his conceptualization of this as general intelligence, now known as Spearman's g, and identified as a generalized problem solving ability which enters into the performance of all cognitive tasks.

This theory of intelligence was challenged in the nineteen thirties by Thurstone (1938) who proposed an alternative model which dispensed with the concept of Spearman's g and postulated six primary mental abilities designated reasoning, spatial, numerical, verbal, perceptual speed and fluency abilities. In the late nineteen-forties an integration of the Spearman and Thurstone models was proposed by Burt (1949). This consisted of a hierarchical model of intelligence in which Spearman's general factor was split into two correlated group factors now generally known as the verbal and visuospatial abilities. These can in turn be broken down further into narrower primary abilities, of which some twenty to thirty have been identified (Cattell, 1971). Burt's model is widely accepted in contemporary psychology and is adopted in this paper. Where possible means for different populations are given for general intelligence (Spearman's g) and for the verbal and visuospatial abilities.

Intelligence tests are normally calibrated with the mean IQ set at 100 and the standard deviation at 15. This metric has been adopted and the mean IQ of American Caucasoids set at 100 to serve as the standard in terms of which IQs of all other populations are expressed. Further details of the methods used

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for the calculations of mean IQs for different populations are given in the appendix.

Caucasoids

Mean IQs for Caucasoid peoples in the United States, Britain, Continental Europe, Australia and New Zealand are set out in Table 1. In this and in subsequent tables summary results are given for the geographical location of the sample, the age of the subjects, the numbers, the tests used and mean IQs for general, verbal and visuospatial intelligence. General intelligence is conceptualized as Spearman's g, the general factor present in all cognitive tasks, and most effectively measured by tests of reasoning ability such as Raven's Progressive Matrices and Cattell's Culture Fair Test. It can also be measured by omnibus tests such as the Wechslers and the Stanford Binet. Results from all these tests are entered in the tables under general intelligence. Verbal IQs in the tables are derived from the verbal scales of the Wechslers and from verbal comprehension scales in such tests as the Differential Aptitude and the McCarthy. Visuospatial IQs are derived from the performance scales of the Wechslers and from visuospatial scales in the Differential Aptitude, the McCarthy and similar tests, and from figure copying tests such as the Draw-a-Man.

Inspection of the results set out in the table will show firstly that Caucasoids in the United States and Britain obtain virtually identical mean IQs. This was first demonstrated in the 1932 Scottish survey of 11 years olds who obtained a mean IQ of 99 on the American Stanford Binet. The subsequent studies shown in the table under Scotland and Britain confirm this result. The earlier standardization of tests in the United States were generally based on normative samples of Caucasoids only, such as the early Stanford Binet and Wechsler tests, but the later standardizations such as the WISC-R included Negroids. For this reason an adjustment has to be made to American means for later tests, because when the mean of the American total population is set at 100, the mean of American Caucasoids is 102.25, as derived from the standardization sample of the WISC-R (Jensen and Reynolds, 1982).

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Table 1: Mean IQs of various Caucasoid populations

Caucasoids

Sample	Age	Number	Test	Intelligence			Source
				General	Verbal	Visuo-spatial	
United States	-	-	-	100	100	100	
Austria	adults	187	Culture Fair	101	-	-	Buj, 1981
Australia	9-13	35,000	Otis	95			McIntyre, 1938
Australia	6	600	Coloured PM	104			Reddington and Jackson, 1980
Australia	8-12	400	WISC	-	-	104	Radcliffe and Trainer, 1969
Belgium	adults	247	Culture Fair	98			Buj, 1981
Belgium	5-15	600	WISC	-	-	101	Berte, 1961
Belgium	10-16	920	Culture Fair	104			Goosens, 1962
Britain	13-15	10,000	Differential Aptitude	101	102	102	Lynn, Hampson and Iwawaki, 1987
Britain	adults	1,405	Culture Fair	100			Buj, 1981
Bulgaria	adults	215	Culture Fair	94			Buj, 1981
Czechoslovakia	adults	363	Culture Fair	98			Buj, 1981
Czechoslovakia	6	832	Coloured PM	104			Raven, 1986
Denmark	12	628	Progressive Matrices	100			Vejleskov, 1968
Denmark	adults	122	Culture Fair	99			Buj, 1981
Finland	adults	120	Culture Fair	96			Buj, 1981
France	adults	1,320	Culture Fair	94			Buj, 1981
France	6-9	618	Coloured PM	104			Bourdier, 1964
Germany, DR	7-11	454	Coloured PM	100			Kurth, 1969
Germany FR	6	3,607	Coloured PM	102			Schmidtke, Schaller & Becker, 1978
Germany FR	adults	1,572	Culture Fair	107			Buj, 1981

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Greece	adults	220	Culture Fair	97			Buj, 1981
Hungary	adults	260	Culture Fair	99			Buj, 1981
Ireland	adults	75	Culture Fair	98			Buj, 1981
Italy	adults	1,380	Culture Fair	101			Buj, 1981
Italy	10-16	614	Progressive Matrices	100			Tesi and Young, 1962
Netherlands	adults	333	Culture Fair	107			Buj, 1981
New Zealand	9-15	26,000	Otis	99			Redmond and Davies, 1940
New Zealand	8-16	2,635	Progressive Matrices	102			Raven and Court, 1989
Norway	adults	100	Culture Fair	100			Buj, 1981
Poland	adults	835	Culture Fair	106			Buj, 1981
Poland	10	213	WISC	107			Firkowska et al 1978
Portugal	adults	242	Culture Fair	101			Buj, 1981
Romania	6	300	Coloured PM	95			Zahirnic et al 1974
Scotland	11	1,000	Stanford Binet	99			Scottish Council, 1933
Scotland	11	1,215	Terman Merrill	102			Scottish Council, 1949
Spain	18	113,749	Progressive Matrices	87			Nieto-Alegre et al 1967
Spain	adults	848	Culture Fair	98			Buj, 1981
Sweden	adults	205	Culture Fair	104			Buj, 1981
Sweden	6-15	1,106	WISC	-	-	104	Scandinaviska Test for laget, 1970
Switzerland	adults	163	Culture Fair	101			Buj, 1981
Yugoslavia	adults	525	Culture Fair	104			Buj, 1981
India	children	5,000	various	86			Sinha, 1986
British Indians	11	170	British Ability	96	89		Mackintosh and Mascie-Taylor, 1985
S. African Indians	16	1,063	Junior Aptitude	85			Owen, 1989

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Further inspection of the results set out in Table 1 shows that the mean IQs from all these Caucasoid populations lies in the range of 94-107, with the single exception of a low value of 87 for Spain found by Nieto Alegre et al (1967). The variations between and within the countries are probably due principally to differences in sampling accuracy and procedures and to differences in living standards. Differences in sampling accuracy and procedures can occur because of the difficulty of obtaining representative samples and to differences in whether the mentally retarded are included. In the case of children, those in private schools may or may not be included in the samples. Sampling differences are probably largely responsible for a number of the discrepancies in the means obtained from the same country, e.g. the two studies of general intelligence in Australia give means of 95 and 104, and the three studies of France give means of 98, 104 and 94.

The largest discrepancy in the table is between the mean IQ of 87 for Spain obtained by Nieto Alegre et al and the mean of 98 obtained by Buj. This probably arises from a sampling difference between the two studies. Nieto Alegre et al obtained their sample from military conscripts drawn from the whole of Spain, whereas Buj drew his samples for Spain and other countries from the populations of the capital cities. While the sampling procedure adopted by Buj seems reasonable, it is probable that in less economically developed countries like Spain with a rather backward peasant population there are considerable differences between the mean IQs in the rural areas and in cities. In fact in the Nieto Alegre study there was a range of approximately 15 IQ points between the means of the conscripts from the poorest rural regions and the most prosperous and more urbanized centers. As countries have become more industrialized the numbers of their rural peasantry have declined and rural-urban differences in intelligence have largely disappeared. Thus Scotland was a largely urbanized country by the 1930s and at this time there was virtually no difference in mean IQ between urban and rural children (Scottish Council for Research in Education, 1939).

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In addition to differences in sampling, some of the differences between these Caucasoid populations may also be ascribed to differences in living standards. There is a wide range of these among this set of nations. For instance, in Spain which produced the lowest mean IQ of 87 for military conscripts tested in 1965, the per capita income in that year was 770 US dollars as compared with $2,003 in Britain and $4,058 in the United States (United Nations, 1970). Low incomes have an adverse effect on intelligence because poor people have less to spend on nutritious foods and tend to have less leisure to give their children cognitive stimulation. Nevertheless, in spite of these considerable differences in living standards, the overall picture of the results summarized in Table 1 is one of fairly close similarity of mean IQs among these diverse Caucasoid populations.

The last entries in Table 1 are for the IQs of Indians derived from the Indian sub-continent, South Africa and Britain. The mean of 86 in India is derived from a review by Sinha (1968) of the results of 17 studies of children aged between 9 and 15 years and totalling in excess of 5,000. Mean IQs lie in the range of 81 to 94, with an overall mean of approximately 86. But ethic Indians in Britain obtain a mean of 96 which is within the range of other Caucasoid populations. Their verbal IQ of 89 is depressed, but this is probably because their families are recent immigrants and have not yet mastered the language. The British results suggest that when Indians is are reared in an economically developed environment their intelligence level is about the same as that of European Caucasoids.

Mongoloids

The Mongoloid peoples are those indigenous to north east Asia, north of the Himalayas and east of the Yenisey river. Their mean IQs are set out in Table 2. It will be seen that for general intelligence the Mongoloid peoples tend in the majority of studies to obtain somewhat higher means than Caucasoids. This is the case in the United States, Canada, Europe, Japan, Hong Kong, Taiwan, Singapore and The

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Table 2: Mean IQs of various Mongoloid populations

Mongoloids

Sample	Age	Number	Test	Intelligence: General	Verbal	Visuo-spatial	Source
Japan	5-16	1,070	WISC	-	-	103	Lynn, 1977 a
Japan	6	240	Vocabulary-spatial	97	89	105	Stevenson, Stigler, Lee, Lucker, Kitamura and Hsu, 1985
Japan	11	240	Vocabulary-spatial	102	98	107	" " " "
Japan	2-8	550	McCarthy Scales	100	92	108	Lynn and Hampson, 1986 a
Japan	4-6	600	WPPSI	103	98	108	Lynn and Hampson, 1986 b
Japan	6-16	1,100	WISC-R	103	101	107	Lynn and Hampson, 1986 c
Japan	13-15	178	Differential Aptitude	104	-	114	Lynn, Hampson and Iwawaki, 1987
Japan	13-14	216	Kyoto NX	101	100	103	Lynn, Hampson and Bingham, 1987
Japan	3-9	347	Columbia MMS	110	-	-	Misawa, Motegei, Fujita and Hattori, 1984
Japan	9	444	Progressive Matrices	110	-	-	Shigehisa and Lynn, 1991
Hong Kong	6-15	4,500	Progressive Matrices	110	-	-	Lynn, Pagliari and Chan, 1988
Hong Kong	10	197	PM, Space Relations, Fluency	108	92	114	Lynn, Pagliari and Chan, 1988
Hong Kong	9	376	Cattell Culture Fair	113	-	-	Lynn, Hampson and Lee, 1988
Hong Kong	6	4,858	Coloured PM	116	-		Chan and Lynn, 1989

P R China	6-16	5,108	Progressive Matrices	101			Lynn, 1991
Taiwan	16	1,290	Culture Fair	105	-	-	Rodd, 1959
Singapore	13	147	Progressive Matrices	110	-	-	Lynn, 1977 b
Belgium-Koreans	6-14	19	WISC	110	102	115	Frydman and Lynn, 1989
United States	6-17	4,994	Various	100	97	-	Coleman et al, 1966; Flynn, 1991
United States	6-11	478	various	101	-	-	Jensen and Inouye, 1980
United States	6-10	2,000	Figure copying			105	Jensen, 1973
United States	6	80	Hunter Aptitude	106	97	106	Lesser, Fifer and Clark, 1965
United States - Koreans	6-14	112	various	107			Winick, Meyer and Harris, 1975
Canada-Calgary	15	122	Differential Aptitude	105	97	108	Vernon, 1982
Canada-Vancouver	6-8	38	WISC	100	94	107	Kline and Lee, 1972

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People's Republic of China. The range is from 97 to 110, with a mean of around 106. The lowest figure is the mean of 97 obtained by Stevenson et al for Japanese 6 year olds. One explanation for this result is probably that Mongoloids tend to be late maturers. There is a good deal of evidence for this reviewed in Lynn (1987). It will be noted that the same investigators obtained a mean of 102 for Japanese 11 year olds. A further factor is that Stevenson obtained his American comparison sample from the city of Minneapolis in Minnesota and the mean Caucasoid IQ in Minnesota is 105 (Flynn, 1980, p. 107). This means that 5 IQ points should be added to all of Stevenson's Japanese means.

There is some dispute about the mean IQs of ethnic Mongoloids in the United States. Vernon (1982) reviewed the literature and concluded that the mean non-verbal IQ (general intelligence) was around 110 and the verbal IQ 97. These figures have been questioned by Flynn (1989) who maintains that the respective means are approximately 100 and 97. The best single study of American ethnic Mongoloids appears to be the Coleman et al (1966) report of five age groups spanning the years 6-16 from which Flynn's figures are derived. But there are problems with the Coleman study. One is that in this and other studies the category of Orientals may include Filipinos, whose mean IQ is about 85 (Flynn, 1991) and who therefore pull down the mean of ethnic Chinese and Japanese. Filipinos constitute about 20 per cent of American Orientals and if these are taken out of the Coleman sample the remainder who are largely ethnic Chinese and Japanese obtain a mean non-verbal IQ of 103 and a mean verbal IQ of 98.

A further problem in the Coleman data concerns the nature of the tests of "non verbal ability". Coleman himself is careful to state that the non verbal tests used in his study were not measures of intelligence. The tests were of math ability largely set out in verbal format and this will have given the tests a verbal bias and handicapped Orientals (Coleman 1990). Probably the Coleman non verbal ability tests should not be considered as good measures of general intelligence or Spearman's g. The weaknesses of the American studies of

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Table 3: Mean IQs of various Negroid populations

Negroids				Intelligence			
Sample	Age	Number	Test	General	Verbal	Visuo-spatial	Source
Congo	adults	320	Progressive Matrices	65			Ombredane, Robaye and Robaye, 1952
Ghana	adults	225	Culture Fair	80			Buj, 1981
Nigeria	6-13	87	Colored Matrices, PMA	75	-	81	Fahrmeier, 1975
Nigeria	adults		Progressive Matrices	86			Weber, 1969
South Africa	8-16	1,220	Progressive Matrices	81			Notcutt, 1950
South Africa	adults	703	Progressive Matrices	75			Notcutt, 1950
South Africa	10-14	293	Army Beta	65			Fick, 1929
South Africa	9	350	Progressive Matrices	67			Lynn and Holmshaw, 1991
South Africa	16	1,093	Junior Aptitude	69	60	69	Owen, 1989
Uganda	12	50	Various	80			Vernon, 1969
Zambia	adults	1,011	Progressive Matrices	75			Pons, 1974; Crawford Nutt, 1976

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ethnic Orientals is that hardly any of them provide a good measure of visuospatial abilities or of Spearman's g.

If Flynn should prove to be correct it would appear that the mean IQ of American ethnic Orientals is a little below that of Mongoloids in the countries of the Pacific rim. The explanation for this may be that the early Chinese and Japanese immigrants from whom the majority of ethnic Orientals are derived may have been below the average intelligence levels of their parent populations in Asia. The early immigrants came largely as laborers to build the railways and do other unskilled work developing the infrastructure of the west coast. This not particularly desirable work may have attracted those of less than average ability. If this is so, the high educational and occupational achievements of ethnic Orientals in the United States may be due to high work motivation rather than high intelligence levels.

A striking feature of the results for Mongoloids is that their verbal IQs are consistently lower than their visuospatial IQs. In most studies the differences are substantial amounting to between 10 to 15 IQ points. This pattern is present in Japan, Hong Kong, the United States and Canada. It has also been found among ethnic Japanese in Hawaii although these data are not presented in a form from which mean IQs can be calculated (Nagoshi and Johnson, 1987).

This difference is also picked up in the United States in performance on the Scholastic Aptitude Test (SAT), on which ethnic Orientals invariably do better than Caucasians on the mathematics test (largely a measure of general intelligence and visuospatial ability) but less well than Caucasians on the verbal test (Wainer, 1988). A further manifestation of the strong visuospatial and weak verbal abilities of ethnic Oriental Americans lies in their tendency to do well in professions like science, architecture and engineering which call for strong visuospatial abilities and poorly in law which calls for strong verbal abilities. This pattern of occupational achievement has been well documented by Weyl (1969, 1989) in his studies of the achievements of the major American ethnic populations. His method involves the analysis of the frequencies of ethnic

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Table 4: Mean IQs of various Negroid-Caucasoid hybrid populations

Negroid-Caucasoid Hybrids

Sample	Age	Number	Test	Intelligence			Source
				General	Verbal	Visuo-spatial	
United States	-	-	362 Studies	85			Shuey, 1966
United States	4	4,550	Stanford Binet	87			Broman, Nichols and Kennedy, 1975
United States	2	46	Stanford Binet	86			Montie and Fagan, 1988
United States	6-11	4115	Verbal and non-verbal	84	89		Coleman et al, 1966
United States	6	111	WISC	81	86	80	Miele, 1979
United States	6-16	305	WISC-R	84	87	88	Jensen and Reynolds, 1982
United States	7-14	642	PMA	77	77	83	Baughman and Dahlstrom, 1968
United States	6-11	2,518	Various	84			Jensen and Inouye, 1980
S Africa coloureds	10-14	4,721	Army Beta	84			Fick, 1929
Barbados	9-15	108	WISC-R	82	84	84	Galler, Ramsey and Forde, 1986
Britain	11	113	NFER	86	87		Mackintosh and Mascie-Taylor, 1985
Britain	10	125	British Ability Scales	94	92		Mackintosh and Mascie-Taylor, 1985
Britain	8-12	205	NFER	87			Scarr, Caparulo, Bernardo, Tower and Caplan, 1983
Jamaica	10-11	50	various	75	82	90	Vernon, 1969
Jamaica	11	1,730	Moray House	72	72		Manley, 1963; Vernon, 1969
Jamaica	5-12	71	WISC	66	74	64	Hertzig, Birch, Richardson and Tizard, 1972

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names among those who have achieved occupational distinction calculated in relation to their frequencies in the general population. Thus he finds that common Chinese names like Wong are greatly overrepresented in *American Men and Women of Science*, as compared with their frequency in the general population, but under represented in *Who's Who in American Law*. On the basis of this method he constructs a performance co-efficient for which average achievement is 100. A co-efficient of 200 means that an ethnic group appears twice as frequently in reference works of occupational distinction as would be expected from its numbers in the total population, while a co-efficient of 50 means that it appears half as often. In his first study he finds that ethnic Chinese obtained performance co-efficients of 506 in architecture, 303 in engineering and 438 in science but only 54 in law (Weyl, 1969). His second study on later data confirms this pattern for the 1980s, when ethnic Chinese obtained a performance co-efficient for science of 620, while for law their performance co-efficient was only 24.

It is easy to understand how this remarkable disparity arises. Adolescents typically discover that they tend to be good at some things and poor at others. There is a natural tendency for young people to concentrate on those activities they are good at, be they sciences, languages, arts, music, sport or whatever, and to make their careers in them. The reason that different people are good at different things depends partly on genetic and partly on environmental differences. The widespread appearance of the strong visuospatial – weak verbal ability pattern among Mongoloids in so many diverse geographical locations suggests that it has a genetic basis and that this is responsible for their striking over-achievement in the sciences and architecture and under-achievement in law.

Negroids

The mean IQs of Negroids have invariably been found to be substantially lower than those of Caucasoids. Many studies have been done in the United States and by the mid-1960's Shuey (1966) was able to present a summary of 362 investiga-

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Table 5: Mean IQs of Amerindians

Amerindians

Sample	Age	Number	Test	Intelligence: General	Verbal	Visuo-spatial	Source
United States	6-17	4,994	verbal & non-verbal	94	89		Coleman et al, 1966
Navajo	5-8	44	WISC	79	65	93	Thurber, 1976
Navajo	4-5	27	WPPSI	75	64	91	Cundick, 1970
Navajo	6-7	26	WISC	78	66	96	Cundick, 1970
Navajo	16-17	100	WAIS	89	84	95	Howell, Evans & Downing, 1958
Navajo	-	44	WISC-R	78	64	95	Teeter, Moore & Peterson, 1982
Oneidas	7-14	82	WISC	91	86	97	Turner & Penford, 1952
Canadian Indians	-	236	WISC-R	97	90	105	Crawley in McShane & Plas, 1984
Ojibwa, Canada	-	35	WISC-R	97	91	104	McShane & Plas, 1984
Ojibwa & Crees, Canada	6-7	33	WISC	86	70	101	St John, Krichev & Bauman, 1976
"	9-10	31	WISC	90	81	100	" " "
"	14-15	36	WISC	89	78	101	" " "
"	16-20	60	WAIS	87	91	103	" " "
Dakota Indians	6-16	200	WISC-R	95	86	102	Browne, 1984
Papago	6-16	240	WISC-R	86	75	96	Reschly & Jipson, 1976

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tions. The overall mean IQ of American Negroids was approximately 85. Subsequent studies in the United States such as those of Coleman (1966), Broman, Nichols and Kennedy (1975) and others have confirmed that this is about the right figure.

As a result of these studies it is sometimes assumed that the mean IQ of all Negroids is approximately 85 or 1 standard deviation below that of Caucasoids. However, it has to be noted that almost all American Negroids are Negroid-Caucasoid hybrids (Reed, 1989) and the same is probably true of most Negroids in the West Indies and Britain. To obtain mean IQs of pure Negroids it is necessary to take samples in Africa. For this reason mean IQs for pure African Negroids are listed separately in Table 3 from Negroid-Caucasoid hybrids in the United States, Britain, the West Indies and South Africa.

The first good study of the intelligence of pure African Negroids was carried out in South Africa by Fick (1929). He used the American Army Beta Test, a non verbal test devised in the United States in the First World War for testing recruits who could not speak English, and administered it to 10-14 year old Caucasoid, Negroid and Colored (Negroid-Caucasoid hybrids) school children. In relation to the Caucasoid mean of 100, based on more than 10,000 children, largely urban pure Negroid children obtained a mean IQ of 65, while urban Colored children obtained a mean IQ of 84. It is interesting to note that these South African Coloreds or Negroid-Caucasoid hybrids obtained a mean IQ virtually identical to that of American Caucasoid-Negroid hybrids.

The other studies of the IQs of pure Negroids summarized in Table 3 show means in the range 65-81. Vernon tested his small sample in Kampala with a number of tests and the overall mean was about 80, but this sample was drawn from an academic secondary school and the result suggests that the mean for the population would be around 70. The best single study of the Negroid intelligence is probably that of Owen (1989), who presents results for 1093 16 year olds in the eighth grade who had been in school for around 8 years and should have been well versed in paper and pencil tests. The test used

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Table 6: Mean IQs of various south East Asian populations

South East Asians

Sample	Age	Number	Test	Intelligence			Source
				General	Verbal	Visuo-spatial	
Australia - Aborigines	5-13	83	Peabody Picture Vocabulary	-	80	-	Bruce, Hengeveld & Radford, 1971
Australia - Aborigines	3-4	22	Peabody Picture Vocabulary	-	67		Nurcombe and Moffit, 1970
Australia - Aborigines	9	1,000	Queensland	85	-	-	McElwain and Kearney, 1973
New Zealand - Maoris	13	131	Primary Mental Abilities	93	95	87	Walters, 1958
New Zealand - Maoris	8	151	Progressive Achievement/PM	92	91	-	Harker, 1978
New Zealand - Maoris	8-14	303	Queensland	90			St George, 1983
New Zealand - Polynesians	8-9	71	Progressive Achievement	-	87		Beck and St George, 1983
Carolines Micronesians	12-18	400	Culture Fair	88			Jordheim and Olsen, 1963
Singapore-Malays	**14**	**190**	**Progressive Matrices**	**96**			**Lynn, 1977b**

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was the South African Junior Aptitude which is well constructed and standardized and provides measures of verbal and non verbal reasoning, spatial ability, verbal comprehension, perceptual speed and memory. The mean IQ of the sample in comparison with Caucasoid South African norms is 69. It is also around the median of the studies listed in Table 3. It is proposed therefore to round this figure up to 70 and take this as the approximate mean for pure Negroids.

Negroid-Caucasoid Hybrids

As noted, virtually all American Negroids are hybrids with some Caucasoid ancestry. The same is probably the case with West Indian and British Negroids. Although this has never been documented, West Indian Negroids lived as slaves on white owned plantations from the 17th to the 19th century in similar conditions to those of Negroids in the United States. There was undoubtedly a certain amount of interbreeding between white estate owners and Negroid slaves, which gave rise to a number of Negroid-Caucasoid hybrids whose existence as a considerable class was noted by Anthony Trollope in his *Tour of the West Indies*.

The results for Negroid-Caucasoid hybrids are shown in Table 4. For the United States, seven major post Shuey (1966) studies are listed because of their special interest by virtue of the large number of subjects, because they yield IQs for the verbal and visuospatial abilities, or because they are derived from young children. These show that the Negroid mean IQ of approximately 85 is present among children as young as 2-6 year olds.

In Britain the three major studies of Negroids obtained mean IQs of 86, 94 and 87, broadly similar to those in the United States. Figures are available for two of the Caribbean islands, namely Barbados (mean IQ = 82) and Jamaica (mean IQ = 66-75).

The Negroid-Caucasoid differences appear to be of about the same magnitude for general intelligence and the verbal and visuospatial abilities. Detailed studies by Jensen and his colleagues have shown that when samples are carefully

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Table 7
Means for Progressive Matrices and 12 reaction time measures for 9 year old children from five countries (in milliseconds).

	Hong Kong	Japan	Britain	Ireland	South Africa	SD	r
Number	118	444	239	317	350		
Progressive Matrices IQ	113	110	100	89	67		
Decision time							
simple	361	348	371	388	400	64	-94**
complex	423	433	480	485	501	67	-89*
omo	787	818	898	902	991	187	-96**
Movement time							
simple	273	218	236	260	236	72	13
complex	267	227	261	280	236	66	13
omo	323	268	297	307	256	96	56
Decision time variabilities							
simple	99	103	90	121	129	32	-83*
complex	114	138	110	141	155	30	-73
omo	269	298	285	328	332	95	-85*
Movement time variabilities							
simple	68	63	52	73	69	30	-33
complex	65	66	56	80	70	25	-42
omo	136	127	110	129	119	49	40

One and two asterisks denote statistical significance at the 5 and 1 per cent level, respectively.

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matched the Negroid-Caucasoid differences are greatest for general intelligence (Spearman's g) and for the visuospatial abilities and less for verbal ability (Jensen and Reynolds, 1982; Reynolds and Jensen, 1983; Naglieri and Jensen, 1987). Nevertheless, the broad picture, taking the results as a whole, is that the three abilities are of approximately equal magnitude. This also appears to be the case in South Africa according to the results of Owen.

Amerindians

The results of studies of the intelligence of Amerindians are summarized in Table 5. The mean general IQs have invariably been found to be somewhat below that of Caucasoids. The largest study is that of Coleman et al (1966) which obtained a mean of 94, but a number of studies have reported means in the 70-90 range. The median of the 15 studies listed is 89 which can be taken as a reasonable approximation, indicating that the Amerindian mean IQ falls someway between that of Caucasoids and Negroid-Caucasoid hybrids. The same intermediate position is occupied by Amerindians in performance on the Scholastic Aptitude Test (Wainer, 1988).

In addition, all the studies of Amerindians have found that they have higher visuospatial than verbal IQs. The studies listed are those where the Amerindians speak English as their first language, so this pattern of results is unlikely to be solely due to the difficulty of taking the verbal tests in an unfamiliar language. The verbal-visuospatial disparity is also picked up in the Scholastic Aptitude Test, where Amerindians invariably score higher on the mathematical test than on the verbal (Wainer, 1988).

The strong visuospatial-weak verbal pattern of abilities in the Amerindians resembles that of the Mongoloids, although in the Mongoloids the whole ability profile is shifted upwards by some 10-15 IQ points. This similarity is not altogether surprising in view of the close genetic relationship of the two races, Amerindians being an offshoot of the Mongoloids who crossed the Bering Straits from north east Siberia into Alaska at some time in prehistory. The similarity of the cognitive

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profile of the two races suggests that this profile was present in the common stock from which both contemporary races are derived, and that some factor raised the intelligence levels in the Mongoloids following the geographical differentiation of the two races.

South East Asians

The South East Asian races comprise Polynesians, Micronesians, Melanesians, Maoris and Australian Aborigines. The results of intelligence test studies of these subraces are shown in Table 6. Apart from the low mean of 67 for a small sample of Australian Aborigine children, all the mean Iqs lie in the range of 80-95. The one study to include measures of general, verbal and visuospatial abilities for New Zealand Maoris shows that this group does not share the strong visuospatial-weak verbal ability profile of Mongoloids and Amerindians. Although the intelligence of this group of peoples has not been extensively researched there are sufficient studies to suggest a mean IQ of about 90.

Racial Differences in Reaction Times

It has often been argued that the racial differences in intelligence test performance may be due to the tests being biased or to a variety of environmental factors such as differences in education, experience of dealing with visual representations, motivation, attitudes towards test taking and nutrition. The alternative theory is that these differences have a genetic basis. In order to test for which of these different explanations is correct, a study has been carried out to determine whether the racial differences in intelligence are also present in reaction times. The rationale of the study is that reaction times provide a measure of the brain's neurological efficiency in dealing with very simple tasks and are unaffected by education, motivation and other environmental factors with the possible exception of extreme malnutrition.

It has been shown in a number of studies that reaction times are positively associated with intelligence, and the explanation widely accepted for this association is that reaction times

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provide a measure of the neurological efficiency of the brain in analysis and decision making (Jensen, 1982; Eysenck, 1982). Hence if there are racial differences in reaction times of the same kind as those present in intelligence test performance, it can be inferred that these differences lie at the neurological level and probably reflect genetic differences.

Reaction times consist of the speed with which a subject reacts to simple stimuli. Normally a light comes on and the subject has to press a button to turn it off. Reaction time tasks can be varied to present different degrees of difficulty. In the present study three reaction time tasks were used of different degrees of difficulty. In the simplest task a single light comes on and the subject moves his hand to switch it off. This response normally takes around half a second. In more complex situations, one of several lights comes on and has to be switched off. These are known as choice reaction times and take a little longer. In a still more complex task, three lights come on of which two are close together and one stands apart. Here the subject has to judge which is the light that stands apart and switch it off. This is known as the odd man out task. It is more difficult than the simpler reaction time tasks and typically takes about twice as long.

All three reaction time tasks were used in the present study. In addition, the apparatus used in the investigation was designed to measure two separate processes in reaction time tasks known as movement times and decision times. In these tasks the subject has to make a decision about what to do (decision times) and then execute the decision by moving the finger to switch off the light (movement times). Both these times were recorded automatically on disks by a microcomputer.

The subjects used in the study consisted of 9 year old children representative of the three major races of Mongoloids, Caucasoids and Negroids. The Mongoloids were obtained from Hong Kong and Japan, the Caucasoids from Britain and Ireland and the Negroids from South Africa. All the children were drawn as socially representative samples from typical public primary schools in their respective countries with the

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exception of the Irish children who came from rural areas and whose mean IQ was rather lower than would otherwise have been expected.

In all the five samples decision times, movement times and variabilities were negatively correlated with intelligence. Further details of the reaction time apparatus, testing procedures and analyses of the relationship between the reaction time measures and intelligence for the samples are given in Shigehisa and Lynn (1991), Chan, Eysenck and Lynn (1991) and Lynn and Holmshaw (1991).

Summary statistics for the five samples giving the numbers tested, mean IQs, means for the 12 reaction time measures and standard deviations for the entire sample are shown in Table 7. The last column of the table gives product moment correlations between the Progressive Matrices and the 12 reaction time measures. It will be seen that the Hong Kong and Japanese children obtained the highest mean IQs, fastest decision times and low decision time variabilities, the British and Irish children were intermediate, while the South African Negroids obtained the lowest means on the Progressive Matrices, slowest decision times and highest variabilities. All the correlations are high and five of the six are statistically significant.

The movement times of the five populations do not show any consistent overall relationship with Progressive Matrices scores. It is however interesting to note that the Negroid children tend to have fast movement times. In the complex and odd man out tasks their movement times are significantly faster than those of British, Irish and Chinese children.

It is known that the speed of reaction times is genetically determined to a significant extent. This has been shown by Vernon (1989) in a study of 50 identical and 52 non-identical twins, which produced a heritability coefficient of .51 for reaction times. Somewhat similar results have been reported by Ho, Baker and Decker (1988) for two other speed of information processing tasks which gave heritability coefficients of .47 and .24. These authors have also shown that the positive correlation between measures of speed of information process-

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ing and intelligence arises from common genetic processes suggesting that common genetically controlled neurological mechanisms are involved in the performance of both types of task.

It is therefore considered that the most reasonable interpretation of the Mongoloid-Caucasoid-Negroid results is that these reflect genetic differences between the three racial groups. It is not considered likely that educational differences could be involved because of the extreme simplicity of the tasks. Motivational differences are improbable, because reaction times seem unaffected by motivation (Jensen, 1982). It might be thought that nutritional differences might be involved.

However, the fact that the Negroid children performed faster than the Caucasoid on movement times makes it unlikely that poor nutrition could have reduced neural conduction rates. We are therefore left with genetically determined differences in information processing capacities as the most probable explanation of the Mongoloid-Caucasoid-Negroid differences in decision times.

Contributions to Civilization

A third source of evidence on racial differences in intelligence lies in the degree to which the various races have made significant intellectual, scientific and technological discoveries and inventions. The argument is that these advances are likely to be made by a few outstanding and highly intelligent individuals. There will be more of these in a population where the average level of intelligence is high, and hence the intelligence levels of populations and whole races can be inferred from their intellectual achievements.

The first writer to advance this argument was Galton (1869) but he limited his analysis to the Greeks of the classical period, England and Scotland, the Negroids and the Australian Aborigines. His conclusion was that the Greeks produced the greatest number of intellectual advances and could therefore be considered the most intelligent population. He placed the Scots marginally above the English, and a long way below these he placed the Negroids and the Aborigines.

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Galton's treatment of the problem was sketchy, but it provided the initial idea on which others were to build. The most extensive analysis of this kind was carried out by Baker (1974). He first set up twenty one criteria by which the achievements of early civilizations could be judged. These were as follows:

1. In the ordinary circumstances of life in public places, they cover the greater part of the trunk with clothes.
2. They keep the body clean and take care to dispose of its waste products.
3. They do not practice severe mutilation or deformation of the body, except for medical reasons.
4. They have knowledge of building in brick or stone, if the necessary materials are available in their territory.
5. Many of them live in towns or cities, which are linked by roads.
6. They cultivate food-plants.
7. They domesticate animals and use some of the larger ones for transport (or have in the past so used them), if suitable species are available.
8. They have knowledge of the use of metals, if these are available.
9. They use wheels.
10. They exchange property by the use of money.
11. They order their society by a system of laws, which are enforced in such a way that they ordinarily go about their various concerns in times of peace without danger of attack or arbitrary arrest.
12. They permit accused persons to defend themselves and to bring witnesses for their defence.
13. They do not use torture to extract information or for punishment.
14. They do not practice cannibalism.
15. Their religious systems include ethical elements and are not purely or grossly superstitious.
16. They use a script (not simply a succession of pictures) to communicate ideas.
17. There is some facility in the abstract use of numbers,

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without consideration of actual objects (or in other words, at least a start has been made in mathematics).
18. A calendar is in use, accurate to within a few days in the year.
19. Arrangements are made for the instruction or the young in intellectual subjects.
20. There is some appreciation of the fine arts.
21. Knowledge and understanding are valued as ends in themselves.

Having set up these criteria, Baker proceeded to analyze the historical record of the races to ascertain which have originated civilizations. His conclusion was that the Caucasoid peoples developed all 21 components of civilization in four independent locations. These were the Sumerian in the valley of the Tigris and the Euphrates, the Cretian, the Indus Valley, and the ancient Egyptian. The Mongoloids also developed a full civilization in the Sinic civilization in China. The Amerindians achieved about half of the 21 components in the Maya society of Guatemala, a little less in the Inca and Aztec societies, but these peoples never invented a written script, the wheel (except possibly in children's toys), the principle of the arch in their architecture, metal working, or money for the exchange of goods. The Negroids and the Australian aborigines achieved virtually none of the criteria of civilization.

While Baker confined his analysis to the achievements of the races in originating civilizations, there can be little doubt that the same race differences appear in the historically later development of more advanced cultures. During the last 2,000 years the many discoveries that constitute developed peoples have been made only by the Caucasoid and Mongoloid peoples. For the first sixteen hundred or so years of this period a case can be made out that the Mongoloid civilization in China was marginally ahead. The Han period of around 200-100 BC saw the introduction of written examinations for candidates for the mandarin civil service, an idea which was considered an advance when it was introduced into Britain some 2,000 years later (Bowman, 1989). Printing was invented

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in China by about 800, some 600 years before it was developed in Germany. When Marco Polo visited China about the year 1300 he was amazed at the quality of civilization in the numerous prosperous cities and particularly at the use of paper money, a concept not introduced into the general use in Europe until the nineteenth and twentieth centuries. The Chinese discovered gunpowder about the year 1050 and developed the technology for using it for guns and not only, as popularly supposed, for fireworks. They were the first to invent the principle of the magnetic compass. Their technology for the manufacture of high quality porcelain was well ahead of anything in Europe until the late eighteenth century. Details of these and many other Chinese scientific and technological achievements are given in Needham (1954).

During the last five centuries the Caucasoid peoples of Europe and latterly of North America have pulled ahead of the Mongoloids in science and technology. This is probably because China has been run as a single bureaucratic empire in which innovation has been discouraged first under the emperors and more recently under the communists while Japan was isolated from outside influences until relatively recently. Europe, in contrast, has been divided into numerous states, many of which afforded a high degree of personal freedom of thought, expression and technological innovation, and between which there was open communication. Nevertheless, although the Europeans have generally been ahead of the Mongoloids during the last five centuries, since 1950 the Japanese have provided a strong challenge and have surpassed the West in the production of a number of high quality technological goods.

A useful source for evaluating the contributions of the human races to scientific and technological achievements is available in Asimov's (1989) *Chronology of Science and Discovery*. This lists approximately 1,500 of the most important scientific and technological discoveries and inventions which have ever been made. The first three are bipedality, the manufacture of stone tools and the use of fire which antedate the evolution of the races. Thereafter every single invention and discovery was

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made by the Caucasian or Mongoloid peoples. This compilation confirms the historical record. Who can doubt that the Caucasoids and the Mongoloids are the only two races that have made any significant contribution to civilization.

Conclusion

The studies of racial differences in intelligence test results, reaction times and scientific and technological discoveries show a high degree of consistency. All three sources of evidence indicate that the two races with the highest intelligence levels are the Mongoloids and the Caucasoids. These are followed by the Amerindians, while the south east Asian races and the Negroids are ranked lowest. The intelligence test results and the reaction times tend to indicate that average Mongoloid intelligence levels are a little higher than those of Caucasoids, but the difference is relatively small as compared with other racial differences.

The general consistency of the results from the three sources of evidence, and the consistency of the different intellectual achievements of the races over a long historical period, points to a substantial genetic determination for these differences. If genetic factors were not involved, there would have been much greater variation over time and place and the observed consistencies would not be present. Whatever criteria are adopted, the Caucasoids and the Mongoloids are the two most intelligent races and the historical record shows that this has been the case for approximately the last 5,000 years.

The environmentalist may argue that the Negroid peoples in Africa, the Caribbean, the United States and Britain, and the Amerindians, Maoris and Australian aborigines, all live in socially and economically impoverished conditions, as compared with Caucasoids and Mongoloids, and that these conditions are responsible for some or perhaps all of their low intelligence. This argument can be met by the concept of genotype-environment correlation, originally proposed by Plomin, De Fries and Loehlin (1977) and developed by Scarr and McCartney (1983).

There are two processes of genotype-environment correla-

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tion which are relevant to the present problem. The first is "passive" and has the effect that children tend to be reared in environments which are correlated with their own genetic potentialities. The principle applies for any trait which has a heritability, and this is undoubtably true of intelligence, and in the case of intelligence means that intelligent parents transmit the characteristic genetically through their genes and environmentally through the advantageous environment which they provide for their children. The two modes of transmission have the effect that intelligent children tend to be reared in intelligence-enhancing environments. This brings the genotypes and the advantageous environments into positive correlation and implies that those reared in advantageous environments tend to have superior genotypes. This applies, for instance, to middle class children as compared with working class children, and can also, arguably, be applied to Caucasoid and Mongoloid children as contrasted with those of other races.

There is a second "active" type of genotype-environment correlation which states that people play an active role in creating their own environments. Genotypically intelligent peoples are able to create a socially and economically affluent environment to an extent which cannot be done by less intelligent peoples. Scarr and McCartney call this "niche building", and the two peoples who have been successful in building socially and economically developed niches in which to live and rear their children have been the Caucasoids and the Mongoloids.

The argument frequently advanced that poor social and economic conditions are responsible for the lower intelligence of the Negroids, Aborigines and Amerindians places the cart before the horse. It assumes that the impoverished environments of these peoples are simply the result of external circumstances over which these peoples themselves have no control. Such a claim does not stand up to examination. There are so many cases which it cannot explain, such as the achievements of Chinese, Japanese, Korean and Vietnamese immigrants in the United States and of Indians in Britain and

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Africa. The only plausible explanation for why these peoples have succeeded where others, initially more advantageously placed, have failed is that they have the right genotypes for building socially and economically prosperous environments for themselves and their families.

Appendix: Notes on the Calculation of IQs

One of the principal problems in the calculation of the mean IQs for the various racial populations concerns the date at which the data were collected. Mean IQs in the economically advanced nations have been increasing during the last half century (Lynn and Hampson, 1986; Flynn, 1987). This poses the problem of whether an adjustment should be made for this increase in studies where a test standardized in the United States, Britain, Australia or New Zealand has been administered some years later to another population. The adjustment involves making an addition to the American, British or Australasian means to allow for the time interval between the two test administrations. The effect is generally to increase Caucasoid IQs in relation to those of other peoples. The increases are however quite small and do not remove the higher means obtained by Mongoloid populations, as shown in Lynn (1987).

For the present paper it was decided not to make such adjustments on two grounds. Firstly, the rates of secular increase of intelligence vary widely from about 1 to 6 IQ points per decade in studies of different age groups and different tests. It is therefore impossible to obtain any precise estimate of what adjustment would be appropriate for many of the tests. Secondly, the great majority of the studies employ tests initially standardized in the United States, Britain, Australia or New Zealand. These countries have high standards of living in relation to other populations and therefore enjoy some environmental advantage for the development of intelligence. This advantage is to some degree counterbalanced by the earlier administration of the tests. The decision was therefore made not to adjust the results for other populations

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for the time differential between the two test administrations but to report the mean IQs as originally published. However, tests given to racial groups in the same country as the standardization samples have been reduced to allow for the secular increase in the mean IQ of the base population. This correction applies to the Kline and Lee (1972) Canadian Chinese sample, whose mean IQs are reduced by 7 IQ points to allow for the secular increase of intelligence 1947-1970; and to the Belgian Korean sample whose IQs are reduced by 10 points to allow for a secular increase of intelligence in Belgium 1954-1983.

Figures for general intelligence are derived either from non-verbal reasoning tests such as the Progressive Matrices and the Culture Fair, or from full scale Wechsler IQs. In some studies only verbal and performance Wechsler IQs are reported and where this is the case these have been averaged to give an approximate figure for the full scale IQ. Where means for Wechsler subtests are reported, the verbal IQs are calculated from Vocabulary, Information, Comprehension, Similarities and Arithmetic, and Visuospatial IQs from Block Design, Object Assembly, Picture Arrangement, Picture Completion and Mazes. The reason for this is that factor analysis has shown that these are the best measures of the two abilities (Jensen and Reynolds, 1982). In the case of non- American standardizations of the Wechslers, IQs are calculated from the WISC tests by reading the means off the standardization tables and converting to American IQs. Buj's IQs are given in relation to a British mean of 100.

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PHYSICAL CHARACTERISTICS AND MENTAL ABILITY

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To demonstrate the strong genetic determination of certain physical characteristics, Sir Cyril Burt included physical measurements in many of his studies of twins. However, nowhere in his over 600 books, papers and articles did he attempt to directly relate intelligence to physical characteristics, although in his much maligned 1955 paper he says "Mr. Moore and I correlated assessments for intellectual performance with assessments for physical, temperamental, and moral qualities. This time most of the cross-correlations were certainly positive though never very large". (Burt, 1955). With the database from the Georgia Twin Study it is now possible to relate a total of five physical measurements to mental ability.

The idea that human anthropometric characteristics are related to mental ability is not new. As early as 1902, perhaps even before, no less authority than Karl Pearson attempted to correlate intelligence and head measurements. (Pearson, 1902). There were at least two additional published papers by Pearson (1906, 1925) and one by Pearl (1906) examining the relationship between physical measurements and mental ability. The correlations for these early studies were positive but small. Clark, Vandenberg and Proctor (1961) reported significant correlations between head size and mental ability. They concluded that "tests which correlate highly with these physical measurements may be better measures of innate capacity than those which do not."

Recently Richard Lynn published additional new evidence on the relationship of brain size and intelligence. (Lynn, 1990 a). In three studies of eight-and nine-year-old children in Northern Ireland and England Lynn found correlation coefficients of +.18 to +.26 between head size and intelligence.

Now that Burt is vindicated (Joynson, 1989) at least two papers by Sir Cyril Burt should be added to the above list:

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(Burt, 1944) and (Burt, 1947).

In addition to height, weight, head length and head breadth three other physical measurements were made for the twins participating in the Georgia Twin Study: face length, head circumference and nose length. (Osborne, 1980). In a recent paper Osborne, using only a small portion of the Georgia twins, combined blood gene frequencies and physical measurements in a regression equation to predict mental ability. (Osborne, 1990). The findings were not remarkable but the multiple Rs were high enough, in our opinion, to justify this attempt to replicate the study with a much larger sample drawn from the Georgia Twins. In this new phase of the study subjects will not be treated as twins but as individuals which may reduce somewhat the significance of the random sample cross-correlations.

In the study mentioned above (Osborne, 1990) it was found that the five physical measurements in raw scores were not highly but were slightly related to both IQ and age, see Table 1. To correct for the age factor the anthropometric measures were adjusted for age. The lower portion of Table 1 shows the age-standardized correlations by race. The influence of age was not completely controlled but the age-physical measurements correlations were significantly reduced for both races. In the remainder of the paper age-standardized physical measures will be used rather than raw scores.

With the mental ability index (TOTIQB) as the dependent variable and face length, head length, head breadth, head circumference, and nose length as predictors, multiple regression equations were computed for each large group sample, i.e., all white sample, N=224, all black sample, N=252, all males, all females, etc. Shown in Table 2 are the regression equations for the eight major groups with corresponding Rs and Rsquares. Rs are all positive with some above .400 and none below .248. For some reason males whether grouped together or taken by race yield higher Rs than females. Multiple regression predictions of mental ability from five physical measurements are not remarkably high but they are higher than the rs reported in the early work of Pearson

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Table 1

Correlations Between Mental Ability, Age, and Physical Measurements
White Sample=224; Black Sample=252

Correlations

TotIQB vs Five Physical Measures (Raw Scores)

	Face Length	Head Length	Head Breadth	Head Circ.	Nose Length
Whites	.209	.279	.172	.210	.101
Blacks	.149	.258	.137	.192	.081

Age vs Five Physical Measures (Raw Scores)

Whites	.176	.068	.163	.079	.268
Blacks	.146	.050	.055	.079	.094

TotIQB vs Five Physical Measures (Age Standardized)

Whites	.166	.253	.121	.237	.011
Blacks	.126	.227	.116	.189	.061

Age vs Five Physical Measures (Age Standardized)

Whites	.065	.003	.038	.125	.017
Blacks	.006	-.043	-.066	-.056	.094

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Table 2

Multiple Regression Predictions of Mental Ability from Five Physical Measures: Face Length, Head Length, Head Breadth, Head Circumference, and Nose Length For 476 Black and White Adolescents

Mental Ability	R	RSquare
White Sample (224)		
TOTIQB=107.747+(Facel*1.066)+(Headln*1.547)+(Headbr*-.374)+, (Headcir*1.597)+(Nosel*-1.650)	.286	.082
Black Sample (252)		
TOTIQB=93.979+(Facel*.201)+(Headln*1.377)+(Headbr*.584)+, (Headcir*.205)+(Noseln*.171)	.248	.061
Male Sample (190)		
TOTIQB=98.204+(Facel*-.648)+(Headln*6.321)+(Headbr*3.614)+, (Headcir*-3.901)+(Noseln*1.108)	.428	.183
Female Sample(286)		
TOTIQB=100.043+(Facel*-2.628)+(Headln*3.777)+(Headb*2.631)+, (Headcir*-2.465)+(Noseln*1.551)	.338	.114
White Male Sample(106)		
TOTIQB=106.923+(Facel*3.655)+(Headln*2.297)+(Headb*-.080)+, (Headcir*-.652)+(Noseln*-2.081)	.347	.121
White Female Sample(118)		
TOTIQB=108.014+(Facel*-.413)+(Headln*.242)+(Headb*-.299)+, (Headcir*4.098)+(Noseln*-.998)	.309	.095
Black Male Sample(84)		
TOTIQB=92.344+(Facel*-.504)+(Headln*1.599)+(Headb*-1.398)+, (Headcir*1.939)+(Noseln*-.795)	.412	.169
Black Female Sample(168)		
TOTIQB=94.929+(Facel*.471)+(Headln*1.404)+(Headb*1.339)+, (Headcir*-.347)+(Noseln*.659)	.292	.086

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and Pearl and the more recent findings of Clark, Vandenberg, and Proctor and Lynn.

The question arises, of course, will the Rs stand up under cross-validation? Our samples were large enough to make two random samples of each of the groups shown in Table 2. Using SYSTAT random sample program, two 50% samples were drawn from each major group. The Sample #1 of all males contained 96 subjects. There were 94 in Sample #2.

With IQ as the dependent variable and the five physical measurements as predictors the R was .411 and Rsquare .169 for Sample #1. Next the coefficients determined from all male Sample #2 were applied to Sample #1 to predict IQs. The new predicted R was .403 and the Rsquare was .162. That is, coefficients derived from Sample #2 when applied to Sample #1 yielded Rs only .008 lower than the Rs derived from Sample #1 with Sample #1 coefficients. This procedure was repeated for all remaining groups. When the analysis was made by race the Rs and Rsquares were somewhat lower than those found when the analysis was made by sex. See Table 3. This procedure was repeated for the other seven groups. Shrinkage in the Rs in these groups was not as insignificant as in the case of all males but overall, except in the case of white females, shrinkage of the multiple Rs was about .10.

Richard Lynn in his recent *Human Evolution* paper (Lynn 1990 b) summarizes the results of ten studies dating from Pearson in 1906 to his own in 1990 all showing a low positive association between brain size as measured by head circumference and intelligence in man. The present study combines four other physical features with head circumference in an effort to determine whether the additional variables enhance the correlations. By adding head length, head breadth, face length and nose length to the equation, multiple Rs are in eight cases in ten greater than the early studies summarized by Lynn. Our findings are offered in support of Lynn's belief that "the evidence is sufficiently strong to make it indisputable that brain size and intelligence in man are significantly associated." It should also be noted that the subjects of most of the earlier studies were Caucasian males. It is our claim that the associa-

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Table 3

Multiple Regression Predictions of Mental Ability
from Five Physical Measures: Cross-validating
Random Samples by Race and Sex for 476 Black and White Subjects

	Number	R	RSquare
Random Sample of All Males, Sample #1	96	.411	.169
Sample #1 predicted from coefficients of #2		.403	.162
Random Sample of All Males, Sample #2	94	.447	.200
Sample #2 predicted from coefficients of #1		.437	.191
Random Sample of All Whites, Sample #1	110	.366	.134
Sample #1 predicted from coefficients of #2		.185	.034
Random Sample of All Whites, Sample #2	114	.283	.080
Sample #2 predicted from coefficients of #1		.164	.027
Random Sample of All Blacks, Sample #1	125	.281	.079
Sample #1 predicted from coefficients of #2		.204	.042
Random Sample of All Blacks, Sample #2	127	.254	.064
Sample #2 predicted from coefficients of #1		.164	.027
Random Sample of All Females, Sample #1	146	.305	.090
Sample #1 predicted from coefficients of #2		.222	.049
Random Sample of All Females, Sample #2	140	.439	.193
Sample #2 predicted from coefficients of #1		.275	.076
Random Sample of All White Males, Sample #1	55	.367	.135
Sample #1 predicted from coefficients of #2		.266	.071
Ramdon Sample of All White Males, Sample #2	51	.367	.135
Sample #2 predicted from coefficients of #1		.257	.066
Random Sample of All White Females, Sample #1	56	.395	.156
Sample #1 predicted from coefficients of Sample #2		.068	.005
Random Sample of All White Females, Sample #2	62	.388	.151
Sample #2 predicted from coefficients of Sample #1		.086	.007
Ramdom Sample of All Black Males, Sample #1	43	.555	.308
Sample #1 predicted from coefficients of #2		.110	.012
Random Sample of all Black Males, Sample #2	41	.453	.205
Sample #2 predicted from coefficients of #1		.143	.020
Ramdom Sample of all Black Females, Sample #1	84	.368	.135
Sample #1 predicted from coefficients of #2		.241	.058
Ramdom Sample of all Black Females, Sample#2	84	.275	.076
Sample #2 predicted from coefficients of #1		.149	.022

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tion between physical characteristics and intelligence in man applies equally well to males and females and blacks and whites.

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ESSAYS ON GERMANIC RELIGION

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ADDENDUM TO "EUGENICS REVISITED"

William J. Andrews
Former Professor, University of Maryland

The purpose of this paper is to enlarge upon an article, "Eugenics Revisited,"[1] previously published in this journal, and to provide additional suggestions concerning the eugenics test proposed in the original article – with a particular focus on the requirements that such a test must meet for public acceptance of the results.

The original article cannot be adequately summarized here, and we would suggest that readers not familiar with it should examine it before reading further. Others will recall that the article refers to recent developments in technology that have enabled man, for the first time in the history of evolution, to evade – if only temporarily – the Draconian law of the "survival of the fittest." One of the postulated effects of this evolution-evading process is the gradual erosion of man's intellectual competence. Consideration of this problem suggests that another problem should also be addressed, which has much in common, and this is the question of group differences in intellectual ability.

Several eugenic approaches are compared in the referenced article, none of which seem to be without serious disadvantages. Yet ignoring the present dysgenic threat may be the worst choice of all – certainly as far as the well-being of future generations is concerned. Several "what if" scenarios were described to illustrate the type of results which might be expected if the problem of dysgenics is ignored.

The referenced article selects a eugenic plan aimed at benefitting the more "needy" in society. This requires a number of such families to voluntarily accept genetic material from donors with higher IQ selected from the participants'

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1. Andrews, William J., "Eugenics Revisited," *Mankind Quarterly*, Vol. XXX, No. 3, Cliveden Press, 1990.

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own racial group. The major rationale for this proposal is the obtrusiveness which is an inherent problem with eugenic methods where the eugenic effect is obtained by encouraging variations in family size as necessitated by "positive" eugenics (encouraging more favored parents to produce more offspring) or "negative" eugenics (discouraging reproduction by genetically ill-favored parents). In the present paper, the eugenic methods described in the referenced article are used for purposes of illustration.

While the thrust of the original paper is hereditarian, a section entitled "Risk Assessment" demonstrates that even if the probability of the dysgenic threat being real is only on the order of one part in one thousand (1/1000) or greater, on an insurance basis the country should perform an experiment to discover reality, so that we may make a rational decision about what is at the very least a potential problem. The article also points out that even if the tenets of the article are true any such effort should be initiated with a test phase to establish feasibility, since the practical aspects have never been explored in detail. One could then define a program which would be as effective and unobtrusive as possible. Thus, unless it can be demonstrated that there is no dysgenic threat to at least one part in one thousand, there is clear reason for testing the eugenic proposal outlined in the referenced article.

Requirements of an Acceptable Test Plan

The following suggestions do not constitute an implementation plan, but focus rather on desirable characteristics for such a plan, and how they may be achieved. The following requirements would need to be met when designing the test plan:

1. The plan should be a pragmatic test that is understandable by those not skilled in relevant scientific disciplines.
2. The plan should be minimalist, i.e. no more obtrusive than necessary to meet the plan objectives.
3. Participation in the test should be voluntary.
4. The test should unambiguously separate genetic from

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cultural or environmental effects by completely decorrelating the two within the limits of statistical error.

The rationale for the first requirement is that the subject of eugenics is so fraught with emotion and politics, that unless the public at large understands the reasons for the particular test design and the consequences thereof, they will be at the mercy of self-appointed experts who will provide believable rationalizations for any and all popular viewpoints – including authoritarian denial of all eugenic programs on an "ethical" as opposed to a logical basis. Similar problems arise in areas other than those discussed in this paper, such as nuclear waste disposal. One should never underestimate people's capability for uncritical acceptance of whatever they may wish to believe. On an evolutionary basis, the purpose of thinking is survival, and from society's standpoint, the search for the truth is in the long term both beneficial and essential. But Nature's "goal" of raw survival, however, is not necessarily compatible with such short term goals as human satisfaction and happiness which frequently come to dominate a society's mores.

The second and third requirements listed above are values, and are either self-evident or arbitrary, as one chooses.

The fourth requirement is essential to the test scheme, as a failure on this score would invalidate the data obtained by the test. If there is any coupling between environmental and genetic causes, even if the design is scientifically correct, the test, in practical terms, becomes ambiguous. If the public cannot comprehend the subtleties of statistical analysis, they may be easily misled by self-appointed "experts" who will not of necessity be unbiased.

Both environment and heredity have an influence on IQ, but they have very different characteristics. An increase in a person's IQ due to environment is transitory as compared to the genetic effect. An increase stimulated by environment may enhance the IQ of a person's children, but it is not a "permanent" increase. If the environment changes the advantage is lost. Genetic gains, however, are preserved through environmental difficulties, and provide a base on which further gains

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can be realized.

The genetic route is more "mechanical", similar to turning a crank. Attempts to improve the environment in families may impinge upon the family's right to privacy. On the other hand, even if the environmental factors remain uniformly poor through several generations, significant gains can be achieved through eugenics. This is not to suggest that the role of environmental conditions should not be examined but rather that efforts to improve both environment and heredity are justified.

These requirements suggest the following derived needs:

A. *The test should use internal, as contrasted to external, controls.*

The reasoning here is that participation in the test is a significant environmental influence, and that self-selection and exposure to the test situation might influence the test results, making comparison to an outside group invalid. It does not seem feasible to design a test in which participants would not be able to discern whether they were eugenics participants or part of a control group.

B. *Participants in the test should not have knowledge of the specific characteristics of their donor, including knowledge of the donor's IQ and socio-economic status (SES).*

This requirement is designed to avoid the self-fulfilling prophecy problem, as has been widely discussed. Participants must not even be thought to have such knowledge, as in that case the test results would be discounted generally. Admittedly this makes the test more obtrusive, and impinges upon what one would like to think of as a participant right. The participants should have a complete description of the donor pool, from which the donor would be chosen at random. They should be asked to sacrifice detailed knowledge in the interest of providing society with a useful and acceptable test result. The hypothesis is that participants could be found who would be sufficiently altruistic to be able to live with this restriction.

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C. *The donor pool should have a minimum IQ limit selected as a compromise between participants' interests and the number of participants needed.*

This has some significant implications for the test design. In order to be fair and appeal to participants, the donor IQ levels should be greater than that of the participants by a significant margin. For a given accuracy requirement, the number of participants required varies inversely with the square of the range of donor IQ. If, for instance, all of the donor IQs were equal, then one could not distinguish donor IQ from the effects of test participation, and this would invalidate the test. Thus the lower cut-off level in IQ for donors would need to be selected as a compromise between fairness, attracting participants, and the total number of participants required. It is presumed that a reasonable compromise can be found.

D. *The experiment should be double-blind; neither the participants nor those, such as social workers and physicians, who have contact with participants should be aware of the specific assignments of donors to participants.*

Since human communication is not always explicit, and information can be transferred through body language, attitudes, and the general course of conversation, all participant's contacts under the program would need to be persons who are not knowledgeable on the question of specific donor IQ. Since this includes a large part of the organization staff, in order to make the test believable, access to such information would need to be restricted to a very small set. Since a knowledge of the assignment of donors to participating families is necessary for calculating statistical parameters, this responsibility might be assigned to a subset of the data-processing group with direct administrative control (at least on this question) from the top.

It is difficult to devise a double-blind test that is readily subject to verification without significant losses. The more tightly the participant-donor match is held, the more one may question the vulnerability of the test to cheating since very few

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have access to the data. It is not clear whether this issue would become significant, but it is appropriate to decide how to manage this problem if it does come up. The problem is that it is very desirable to continue the program well into the adult life of the children so that more complete and convincing results can be obtained. If the test program were of short duration, one could perform the test, and then release the data at an early date after the test was complete. But if one wants both openness to test details and long-term results, some way of accomplishing this would be useful.

One way of doing this would be to sacrifice some small part, say ten percent, of the test base for this purpose. A group of outside observers could be requested to check the match on a random sample that they select. This would not only permit a check of the assignment data, but also permit the checking of the test results, with, however, errors some factor of three larger. Future calculations and projections should be based upon the participants who were not part of this check, as, here again, the self-fulfilling prophecy problem applies. Such a verification is costly in terms of the accuracy of the long-term results, and should be used only if serious questions were raised about the integrity of the test team which were not otherwise resolvable. A compromise might be to perform the same procedure using a group trusted by both sides as judges. If both sides of nature/nurture debate accepted the judges' decision, then one could use the data if the participants were not informed of the donor characteristics. There would then be no loss in the accuracy of the test results.

Using standard methods in least-square fits, assuming not-unreasonable ranges for the variables and assuming them to be correlated random Gaussian variables, one can get an estimate of the error as a function of the error term, which is dominated by the large dispersion in the children's IQ. This analysis suggests that a test including 1000 children can estimate heritability to 0.032, as compared to estimates ranging from 0.4 to 0.8. This does not, of course, define the size of the test, as there are many options, such as allowing for multiple births per family. Also, the question of how much accuracy is

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needed is a judgmental one. That, however, cannot be accomplished "off-line." One would need informed comment from all significant groups before deciding on the size of the test, as the impact is not only measured in economic cost, but also in terms of "obtrusiveness."

Significance of Rank-Order Losses

The eugenics program selected as an example and described in the referenced article as "helping the needy" is based on the idea that only the less intelligent, poorer segment of society would be invited to participate and benefit from this eugenic program. However, one should remember that improving the rank-order of the needy means that some non-participants might drop in rank order. Although no one loses absolutely in competence, and society as a whole would be better off, people often seem more strongly motivated by rank than absolute measures of wealth or status. This effect was never explicitly discussed. Further consideration of this effect in semi-quantitative terms suggests that relative losses in rank order for a group can be perceived by members of that group as more significant than the gains for society as a whole. This fact may be one of the reasons that "helping the most needy" is not a universally popular idea. This concern need not arise from a conscious or explicit feeling or decision, as human rationalization for self-serving ends can be unrecognized and subliminal. It is a thesis of this paper that, while perceived losses incurred for the good of the whole are often not helpful in that they can create an adversarial environment, making the losses explicit is not damaging to society's interest. Also, there is no reason why all groups in society could not benefit by participation in similar donor programs.

The reference paper discusses a number of eugenic methods, including denial, and on a judgmental basis selects one as an example. The choice of a eugenic method, including even the decision not to implement any eugenic program, depends upon a qualitative assessment of a person's instinctive and social response to what are certainly significant choices. A problem in the selection of a "best" mode is that it is difficult

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to separate cultural from inborn, instinctual effects. Thus, if our culture were to change, choices which are now viewed as undesirable could in a new environment be preferred: the mode selected for explication may not correspond with the social mores in the future. However, this problem is basically generic to eugenic programs that use family size control as the eugenic mechanism, and does not arise in the case of the program discussed here.

The analysis here uses the same general approach as made in the reference paper. Some differences include the neglect of any IQ/birth rate slope. The model in the reference not only tracked sub-populations, but projected growth rates to project total population averages. Statistical results which encompassed the entire scope of the original study would be so complex that comprehension is best obtained with less detail. Here, presentations are shown for daughter population rank order, with and without a eugenics program, for decile cuts of parent rank. Several levels of eugenic efforts and plans were included, with a progression through various levels of participation and obtrusiveness. Since the changes appear to be linear with the size of the background eugenics program, intermediate results are not given.

Figure 1 illustrates the detailed distributions obtained, here selected for the participation level 0.3 case. Data is given for the first, fourth, seventh, and tenth deciles for the eugenic cohort. What is surprising is the depth of penetration of the first eugenic decile in one generation into the relatively high-ranking levels. For the tenth decile, there is no progress at all, as the tenth decile corresponds to the average donor level assumed. If there were an active screening program for genetic disease and or handicap, there would be some progress on that score, but it is not included here. Providing results for all cases is both too voluminous for inclusion and readily extrapolated from those given in any case.

Figure 2 shows average gains in rank order for one generation as a function of parent's rank order. Data is shown for four cases. The upper set of solid curves is the IQ rank-order for the eugenic cohort. The upper curve assumes that the

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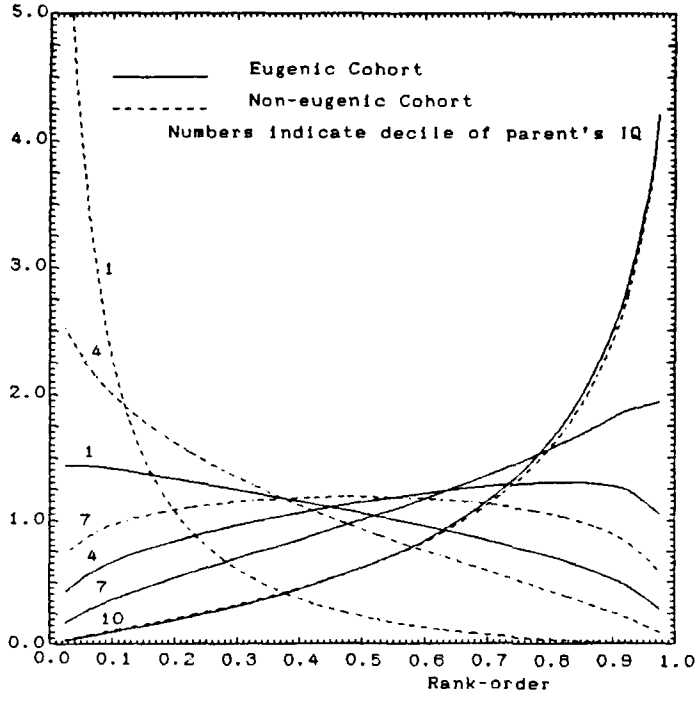

Figure 1. Rank-order distribution in IQ for eugenic and non-eugenic cohorts for deciles 1, 4, 7, and 10 of parent distribution and 0.3 fractional participation.

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eugenics program is not large enough to sensibly affect the gain in rank of the participants. The lower solid curve shows the loading affect caused by a eugenics program which has a large, 0.3, participation level. This reduces the gains substantially, but not by an order of magnitude. The lower set of dashed curves shows the same thing but for the non-participants. The no-eugenics program case illustrates the expected regression towards the mean due to the fact that the heritability is finite. The losses in rank of the non-participants is significant, but not debilitating. Note also that this is for a very obtrusive program, about three times the level needed to counter the downward drift that many predict.

There is a significant caveat to this gain, however. These calculations assume a single breeding population rather than a collection of several groups. These calculations consequently only imply gains for the most needy to the average IQ of their group rather than the average IQ of the society as a whole. The gains in the eugenic cohort drop as the interval between the donor and participant's IQ decreases. With no eugenics program, the "gain" for the non-participating group in rank-order is symmetric, and results from the regression towards the mean in each generation.

Overall, the penalties for the non-eugenic cohort are significant on a relative-rank criterion, but not debilitating. One approach to alleviate concern and opposition on this score would be to permit participation in the program independent of IQ. An objection to this is that many persons would prefer to have their cake and eat it too; they would like to preserve their rank without participating. The only way they can achieve that goal is to deny those who wish to improve the lot of their children and group the opportunity to do so.

One could consider a eugenics program which attempted to make gains in the upper reaches of the distribution, on the reasoning that if trickle down is all we could get, it would be better than nothing. The arguments against such an approach are serious. It takes a much larger level of participation to overcome the inevitable lower effectiveness. Little interbreeding is likely between the more intelligent and less intelligent

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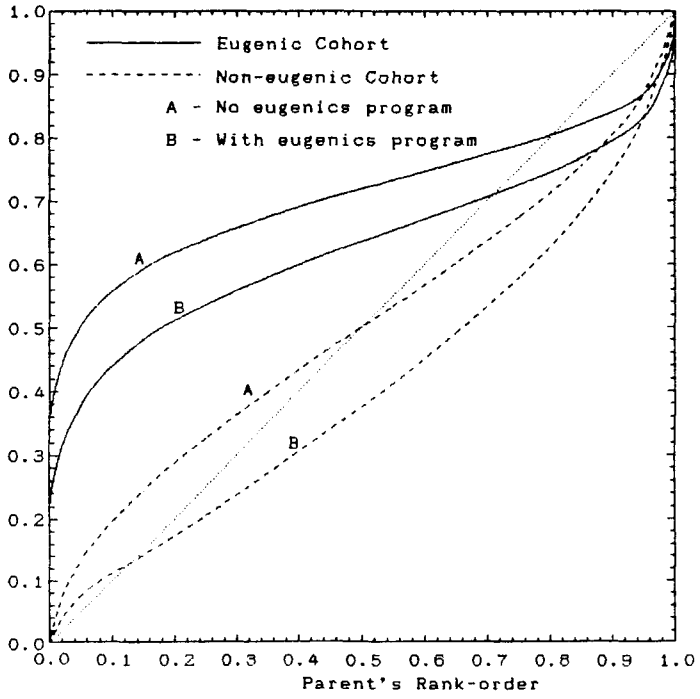

Figure 2. Rank-order gains/losses for deciles of population for eugenic cohort and non-eugenic cohort and for a background of a negligable eugenics program and a very heavy one with a 0.3 fractional participation.

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levels or groups, so that the "needy" would scarcely benefit, and the IQ gap between the capable and the less capable would only increase.

In summary, what has been shown here is what one would intuitively assume, and should come as no surprise. Our presentation is based on the thesis that it is better to be explicit about problems than to rely simply upon unaided intuition. A known problem should be more easily assessed than an unknown one.

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ERRATA

Mankind Quarterly
Volume XXXI, No. 1 & 2 – Fall/Winter 1990

What "Eugenics Revisited" Needs by Raymond B. Cattell
Pages 161-162

... *increase* in mean intelligence level. At a common observation level I am convinced of a negative correlation of intelligence and death rate. (Think of adolescents in automobiles.) And as to complete childlessness we know (1936) that about 60% of people do not reproduce...

Orientals: The New American Elite by Richard Lynn
Pages 185-190. Insert Table 1.

Table 1
Performance Coefficients of Ethnic Populations in the United States

Ethnic Group	Who's Who	AMWS	Science	Business	Finance	Medicine	Law	Average
English	114	87	93	100	115	84	101	99
Jews	447	424	592	287	381	602	684	488
Spanish	8	6	-	7	12	23	5	10
Blacks	18	7	-	14	-	7	0	9
Chinese	111	620	784	31	129	196	24	271
Japanese	139	351	391	92	-	85	-	212
Koreans	61	214	375	-	-	257	-	227

Table 1: Performance coefficients of ethnic populations in the United States.

Cyril Burt's Invariant Kinship Correlations: Another Look
by R.T. Osborne
Pages 163-170

Page 167 should read:

Table 2 (Burt 1966)*
Correlations for Mental, Educational and Physical Characteristics

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ANASAZI RUINS OF THE SOUTHWEST IN COLOR
William M. Ferguson and Arthur H. Rohn
University of New Mexico Press
ISBN 0-9263-0874-0

The Anasazi Indians of the Southwest represent 2,500 years of cultural history, form the early Basket Makers of 700 B.C., to their modern descendants, the Pueblo Indians. the pueblos and cliff dwellings they built during their halcyon days between 1100 and 1500 are the most spectacular ruins north of Mexico. In this book, all of the significant and accessible Anasazi ruins are photographed and described in detail. Many of the photographs are aerial views showing the interrelationships of the structures and the intrinsic beauty of the settings.

All extant Anasazi ruins are documented, but special attention is paid to the magnificent sites of Mesa Verde, Chaco Canyon, Canyon de Chelly, and Kayenta. Also included are illustrations of rock art and examples of the delicate jewelry and beautiful ceramics that have survived.

Because the Anasazi created no written records, interpretations of their culture vary dramatically. The authors present current research and outline the contrasting theories, making this book a readable, engaging, and authoritative study of this ancient people.

Anyone interested in the prehistoric cultures of the Southwest will find this lavishly illustrated volume both informative and aesthetically pleasing.

THE WINNEBAGO TRIBE
Paul Radin
University of Nebraska Press
ISBN 0-8032-5710-4

This classic work on the Winnebago Indian tribe remains

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the best single authority on the subject. Based on Paul Radin's field work in 1908-13, *The Winnebago Tribe* was first published as an annual report of the Bureau of American Ethnology in 1923. It is distinguished by a number of first-person accounts by Winnebago informants and by the thoroughness with which Radin discussed Winnebago history, archeology, material culture, social customs, education, funeral and burial rites, warfare, and shamanistic and medical practices. Included are Winnebago tales and legends and the first complete account of the peyote religion, on which was based the present-day "Native American Church."

Paul Radin (1883-1959) was one of the foremost anthropologists of his day. His works, including his major critical study *Method and Theory of Ethnology* (1933), reflect his view that anthropology is a way of making sense out of history. In this he reflected the view of Evans-Pritchard, who declared that "history is nothing if not anthropology, and anthropology is nothing if not history." This view does not exclude structuralism, quite the contrary – history makes better sense when the changing structures that organize societies can be revealed. Radin emphasized the need for accurate primary documentation, and popularized the use of autobiographical documents. Much of the value of *The Winnebago Tribe* comes from his careful collation of participant accounts.

INDIAN CHIEFS AND GREAT CHIEFTAINS
Charles A. Eastman
University of Nebraska Press
ISBN 0-8032-6720-7

First published in 1918, *Indian Heroes and Great Chieftains* comprises biographical vignettes of fifteen great Indian leaders, most of them Sioux and some of them, like Red Cloud and Rain-in-the-Face, friends and acquaintances of the author. Eastman pays tribute to Little Wolf, the Cheyenne chief whom he knew well, and describes the career of Chief Joseph of the Nez Perces, whom he assisted in drawing up a document of

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grievances presented to the government in 1897. Indian leaders included in the text are Crazy Horse, Sitting Bull, Spotted Tail, Little Crow, Gall, Two Strike, American Horse, Dull Knife, Roman Nose, Hole-in-the-Day, and Tamahay (who counseled against the Sioux uprising in Minnesota).

Eastman was himself a Santee Sioux, who was four years old at the time of the 1862 Sioux uprising. Separated from his father in the aftermath of the rebellion, he spent eleven years with relatives in Canada before being reunited with him and taken to Dakota Territory. Deeply influenced by his father, who had been converted to Christianity, he followed "the white man's trail," attending Dartmouth and, in 1890, becoming a government physician at the Pine Ridge Agency. His fame today rests on the eleven books he wrote about Indian culture.

GOD AND GREEK PHILOSOPHY
L.P. Geron
Routledge
ISBN 0-415-03486-8

Many have wondered why the pagan Greeks excelled in mathematical and scientific as well as philosophical reasoning, and the answer may be in that they saw reality clearly, and were free to question what they saw, rather than become lost in arguments about interpreting any "revealed word of God" – a "revealed law" which had to be accepted by all good "believers." The pagan Greeks believed that man was free to ask questions about the world and about the gods.

For the pre-Christian Greek philosophers, arguments for the existence of god were a part of natural theology, which is distinguished from and is held to be superior to mythic and civic theology. Unlike Christian, Jewish or Islamic religion, Greek natural theology is a type of scientific realism. God is a hypothetical entity postulated as an ultimate explanation of various data.

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The Decline and Fall of the Freudian Empire

Hans J. Eysenck
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